CYCLE guide

JUNE
1967
50¢

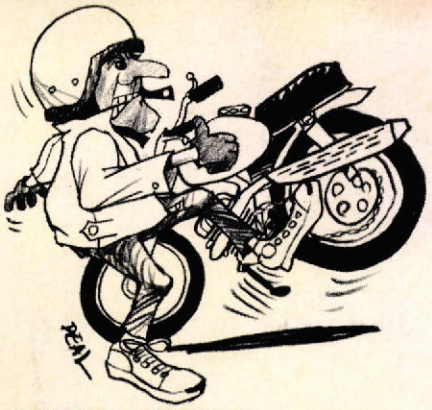
FOR RIDER AND BUYER

DAYTONA: the men, machines and the races

CLOTHING GUIDE Part 2 ● THE NORTON MANX ● DRAGGING FOR EVERYONE ● WHY WON'T IT START? ● DISC BRAKES FOR BIKES ● ON TOURING EUROPE ●

TRAIL BIKE ISSUE:
We compare Yamaha Honda Bultaco Bridgestone Suzuki Hodaka

by the editors of SPORT CYCLE magazine



kick-stand

gripes and praise from our readers

CRUDE? VULGAR?

This letter is being written by the mother of a sixteen year old boy who is the owner of a Honda and also an avid reader of all sorts of cycle stories and magazines and is a bike nut as are so many in this age group. My purpose is not to knock the bikes, they are here to stay and their appeal is granted, most people like them.

Why then does a magazine such as yours feel it is necessary to show a bikini clad, practically naked young lady in your advertising? Is it really necessary to use such models to sell the book or machines? I think not. What does a near naked young woman add to the sales pitch? Aside from crude and vulgar appearance of the advertising of such near nudes in a publication such as yours, what is the real idea?

I will not belabor the point further, it is a frightening thing the world is facing. God help our young people and the old ones too.

I will not affix my name to this letter because it is not written with the wish to receive publicity and no doubt would just be the butt of jeers from advocates of the 'new morality'.

A MOTHER

Clare, Mich.

If you checked the April issue (and this one too) you'll find that we've changed the—crude, vulgar—house ad. However, our reason was not that upon which you expounded.

The young lady, brace yourself, was properly attired for the environment . . . namely the beach. We felt, however, that she was not properly dressed for motorcycling and so the photo was dropped.

We won't delve into the new morality, but shall leave this to PLAYBOY MAGAZINE with an assenting vote. However, we beg you for your own Puritan good, to avoid the beach at Cannes, topless bars and 90 percent of the shows in Las Vegas. Further inquiries should be addressed to Dear Abby.

THAT AIN'T ALL

After reading issues number one and two of CYCLE GUIDE I conclude that your period of editorial adolescence lasted but one issue . . . some sort of record. The errors in fact and emphasis in issue number one, although minor, were annoying. Why three pages of Morini and none of Ducati? Why pictures of Suzuki 80 models now obsolete? Etc.

Issue number two was quite entertaining and more informative. Apparently you plan to direct your appeal to the individual new to cycling. This individual is frequently afraid to delve into the more forbidding technical publications now on the market. Your approach, with more down-to-earth explanations and good graphic representations, is fine, as you are no doubt aware.

I suggest you continue to emphasize safety and riding techniques. Personally, I can't understand why no concerted effort has been launched to expand driver education programs to include motorcycle operation. Perhaps it already has. If so, the story of how this was accomplished and the results would be valuable.

Lastly, I cast my vote for a road test of the Suzuki X-6 scrambler, since the X-6 is my present bike and I'm quite impressed by it.

PAT HALSTEAD

Landover, Md.

Thanks for sticking with us Pat. We hope our future issues will contain articles that will keep you coming back for more.

THINKING MAN'S LETTER

I am very glad to see your magazine speak out for compulsory helmet laws.

"Voluntary compliance" just strikes me as a sweet-sounding slogan to let unscrupulous dealers and rental agencies continue their abuses. They rent to youngsters who have little or no awareness of the special hazards of motorcycling and fail to require or supply any safety equipment.

I owe my life to a Bell TX 500 helmet when, last July, I was thrown some 135 feet after my cycle left the road in the southwest Texas hill country. The cycle was totaled, assorted bones broken, and a serious concussion suffered. The impact in a rock culvert *was hard enough to crack the helmet,* but without it my head would have been wiped off.

ZACK COOMBES

Austin, Texas

'Nuff said?

RIDE TO LIVE . . . . LIVE TO RIDE

Congrats, man. Yours could be the most desired cycle mag on the stands if you can cure the nasty image of bike owners. This image of the 'real' bad guy is exaggerated so much that the cats back East are getting the wrong idea because other mags refuse to print the truth. The truth is that guys out here on the West Coast dig bikes more than life. Back East, you've got to be a bad guy 'first' and the bike is somewhere down the line. This attitude is the one that your mag must cure.

Ride to live . . . live to ride! If you can transmit this feeling, then the 'Choppers' are entirely proper to print along with the colors of their owners. So let me know how you feel and if there is anything I can do to help.

ED 'Big Daddy' ROTH

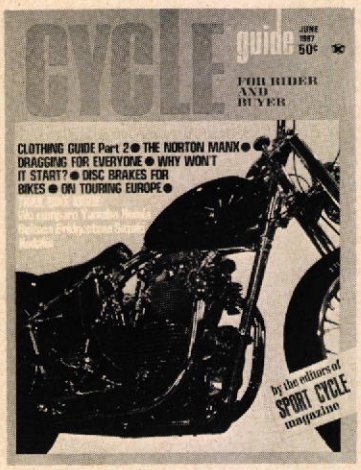
Maywood, Calif.

We dig your philosophy (RIDE TO LIVE . . . LIVE TO RIDE) and we agree with you that the 'chopper' is the soul of bikes. However, we can't quite go along with the bad guy bit. The nasty image of the bad guy is brought about by burning towns, terrifying citizens, etc., and that's what they wanted more than bikes. Remember, like 'most everything else, the bad guy image started in California and very little was lost in the translation. We'll continue to feature sharp 'choppers', but not because the owner is or isn't a member of HA, GG, or whatever. We dig bikes, Big Daddy, not colors or lack of them. ■

cycle guide

VOL. 1, No. 4

JUNE 1967


CYCLE guide
JUNE 1967 50¢
FOR RIDER AND BUYER
CLOTHING GUIDE Part 2 ● THE NORTON MANX ● DRAGGING FOR EVERYONE ● WHY WON'T IT START? ● DISC BRAKES FOR BIKES ● ON TOURING EUROPE ●
by the editors of SPORT CYCLE magazine

ON THE COVER: The mechanical beauty of a motorcycle engine and the effort of a proud owner combine to transform this custom into a machine age work of art. There is a great difference between then and now, as you'll see on page 32.

DEPARTMENTS

KICK STAND/gripes and praise from our readers 2
ACROSS THE EDITOR'S DESK/pertinent and impertinent comments.... 5
THE TOOL BOX/Mike Capalite's pearls of wisdom..... 6
WHAT'S NEW?/products for the rider and enthusiast..... 8
THE COMPETITION SCENE/motorcycle sport in words and pix..... 62
Q & A/your questions and our answers..... 80

FEATURES

TOURIST TROPHY TIGER/the legendary Norton Manx..... 10
STEP RIGHT UP/drag racing for beginners..... 15
CLOTHING GUIDE PART 2/threads for competition..... 20
ON TOURING EUROPE PART 2/tips and stuff..... 26
1919 BSA/proof they don't make 'em like they used to..... 32
CHOPPED CHARLEY/anything for customer service..... 35

TECHNICAL

WHEN IT WON'T START/troubleshooting step by step..... 38
DISCOTECH/the 'in' story on disc brakes..... 44
RECIPE FOR A FRIJOLE/by Senor Hetzler & the Gringo 49

ROAD TESTS

TRAIL BIKE TRIAL/we compare them ALL..... 52

STAFF

Publisher:
Wm. Quinn

Editorial Director:
OCee Ritch

Managing Editor:
Al Hall

Technical Editor:
Mike Capalite

Associate Editor:
Dave Hetzler

Competition Editor:
Lynn Wineland

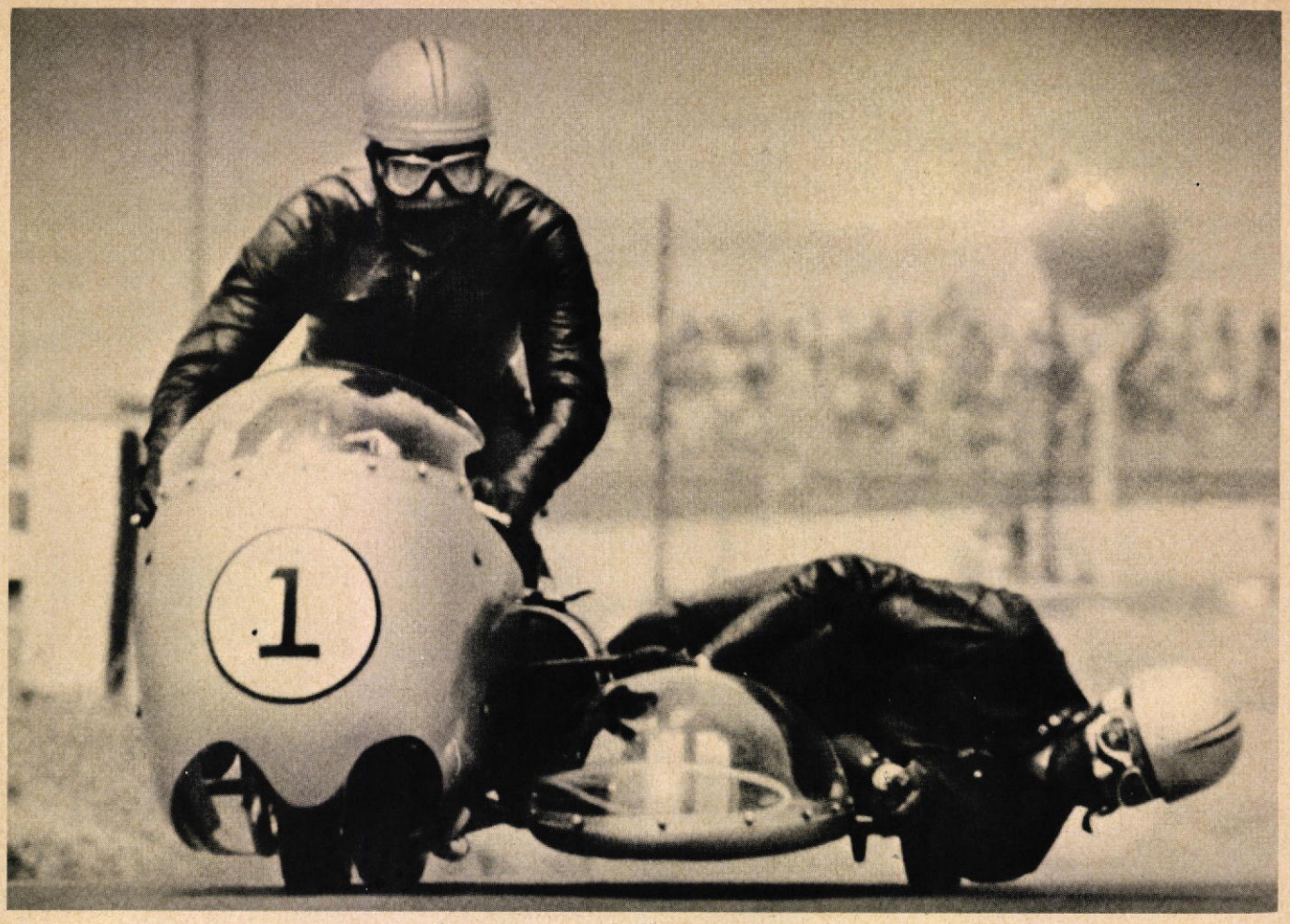
Art Director:
Joe Henning

Editorial Assistant:
Lois Johnson

CYCLE GUIDE is published monthly by Cycle Guide Publications, Inc., 6675 East 26th Street, Los Angeles, California 90022 (213) 685-9402

Contents copyright 1967, by Cycle Guide Publications. All rights reserved under International and Pan American Copyright Conventions. Reproduction of more than 100 words is expressly forbidden without prior written permission.

United States subscription rate: $5.00 one year; $9.00 two years; $12.00 three years. Single copy rate 50¢ (60¢ in Canada). All other countries add $1.00 per year to U.S. rate. Editorial contributions are welcomed by Cycle Guide, but cannot be considered unless guaranteed exclusive. Photos should be accompanied by photographer's and model's release. Manuscripts and photos submitted should be accompanied by self-addressed, stamped return envelope. Cycle Guide cannot be responsible for unsolicited material.



HELP US MAKE CYCLE GUIDE THE BEST MAGAZINE.

We are conducting a Reader Survey and we are interested in your opinions of CYCLE GUIDE Magazine. Please fill in the following questionnaire and mail it to: CYCLE GUIDE Magazine, 6675 East 26th Street, Los Angeles, California 90022. Thank you for your cooperation.

1. Do you own a motorcycle? YES ☐ NO ☐ If yes, which make/model? _____

If no, do you plan to buy a motorcycle? YES ☐ NO ☐ Which make/model? _____

2. Which motorcycle magazines, other than CYCLE GUIDE, do you buy regularly? List in order of preference:

1 _____ *2* _____ *3* _____

Do you subscribe to any of these magazines? YES ☐ NO ☐ Which? _____

Do you subscribe to CYCLE GUIDE? YES ☐ NO ☐

3. Which of the following CYCLE GUIDE features do you like best? A) Technical B) Road Tests C) Competition D) How-to-do-it E) Tool Box F) Humor

List in order of preference: 1 _____ *2* _____ *3* _____ *4* _____ *5* _____ *6* _____

Which of the above features would you like to see MOST? _____

Which of the above features would you like to see LEAST? _____

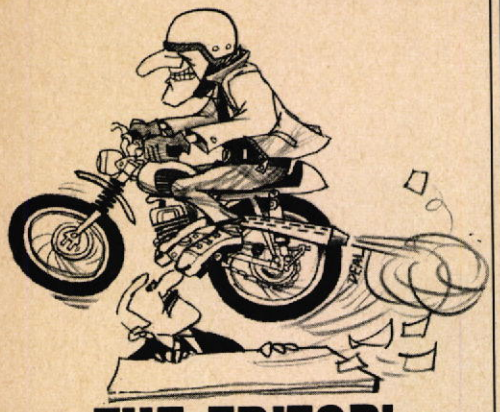
What other features would you like to see? _____

4. Please comment on CYCLE GUIDE. _____

5. Would you please list your AGE? _____ *OCCUPATION* _____

You may sign this if you wish _____

across



THE EDITOR's desk

WE GET LETTERS. Some of them wind up in our "Kick Stand" pages; some receive personal replies; some flutter into the circular file because they lack a return address. There seems to be too many of the latter and we'd like to remind our readers to add their mailing address (preferably printed) below their signature so we can communicate.

Incidentally, if you write for information on a product, we try to put you in touch with the manufacturer or distributor so you can get the scoop first hand. No charge.

A lot of letters ask thought-provoking questions or pose interesting problems. One of the best to come across the desk in recent weeks is from a man who did include his name and address: R. B. Cunningham of Portland, Oregon.

Mr. Cunningham, who retired in 1960, spent 21 years in traffic engineering work and has had a great interest in motorcycle safety. Our "Helmet Guide" material (April) prompted him to write as follows:

Portland, Ore.
Mar. 14, 1967

"I made it my business to study all the reports (that is, driver reports, police reports, and sometimes coronor reports) on every fatal traffic accident in Portland from 1933 thru 1959, and I know quite well that head injuries killed far more auto drivers and passengers than motorcyclists. (Inciden-

Continued on page 81

MAICO 360cc

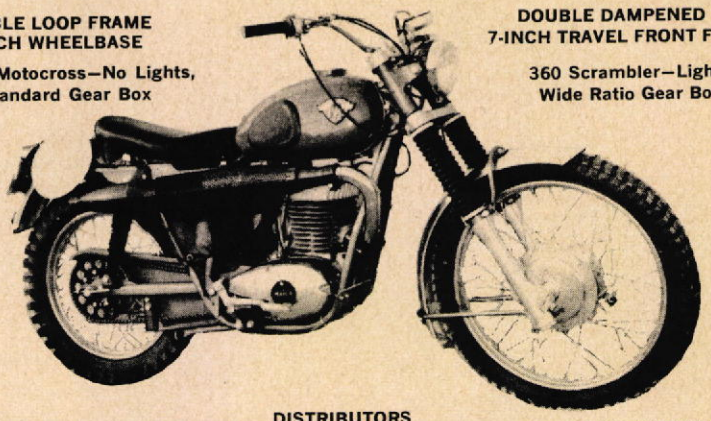
360cc SUPER POWER PLUS LIGHT WEIGHT GIVES EXPLOSIVE ACCELERATION AND SPEED.
RIDE A MAICO 360 AND WIN THE OPEN CLASS!

DOUBLE LOOP FRAME
56-INCH WHEELBASE

360cc Motocross—No Lights, Standard Gear Box

DOUBLE DAMPENED 7-INCH TRAVEL FRONT FORKS

360 Scrambler—Lights, Wide Ratio Gear Box



DISTRIBUTORS

EAST OF THE MISSISSIPPI
GRAY INTERNATIONAL
4461 W. Jefferson Detroit, Mich. 48209

WEST OF THE MISSISSIPPI
COOPER MOTORS
2815 W. Olive, Burbank Calif. 91505 lif.

PROTECT YOUR INVESTMENT

SUN, DAMPNESS, DUST, DIRT, GRIME . . . all these conditions are at work daily to lower the value of your motorcycle if it sits out unprotected, and it really shows at trade-in time in lowered value. Save your paint, chrome, plastic, saddle, wiring and rubber components by keeping your cycle covered. MG MITTEN tailored covers have helped thousands of car owners through the past ten years. Now the same fine quality products is covering bikes. WATERPROOF, made of lightest synthetic, will not tear, has grommets for tying or locking, fold into tiny packet .....$13.50 postpaid

PROTECT YOUR HEAD AND HANDS with a BELL SHORTY HELMET and a pair of EDMONT CYCLING GLOVES.

Edmont Gloves are the newest! Vinyl-treated fabric gives non-slip grip wet or dry and does not get stiff with sweat and use. Washable and color-fast $3.00

Bell's Shorty is a Continental-styled safety helmet ideal for the cyclist. Light in weight and comfortable but providing excellent protection. Fully approved. Sizes 6½ to 7¾ . . . $24.75
Shatterproof Visor for Shorty $1.50

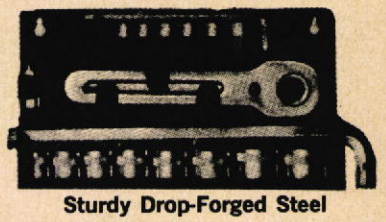
MG MITTEN Dept. CG2
1163 E. Green St., Pasadena, Calif.

FINEST EMBROIDERED JACKET EMBLEMS
Colorful • 3" Diam.
ORDER TODAY!
BIKETOOL ENTERPRISES
P.O. Box 46591
Los Angeles, Calif. 90046

$1.25 Each or All 9 Only $10

SPECIAL MOTORCYCLE TOOL OFFER!

19 PIECE **METRIC** SOCKET SET



Sturdy Drop-Forged Steel
Kit contains: 15 sockets—(all popular sizes) ratchet handle and L handles.
ONLY $5.50 postpaid
Fill out coupon and send today!

BIKETOOL ENTERPRISES
P. O. Box 46591
Los Angeles, California 90046

Please send me.....tool kits @ $5.50 each.

I enclose $..... in ☐ check ☐ money order

name

address

city state zip

Important—check one: ☐ Metric ☐ American

Make of motorcycle.....

the tool box

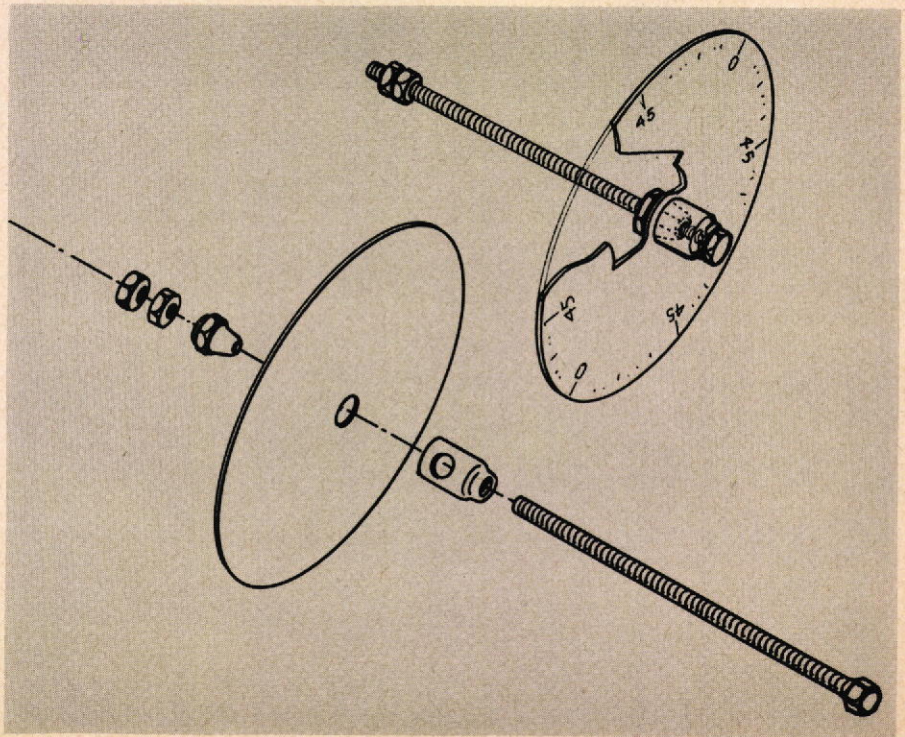
By Mike Capalite

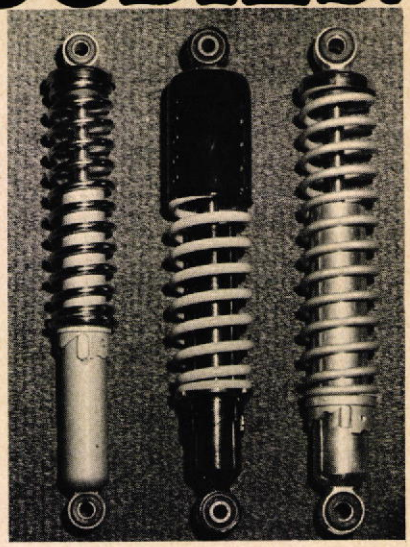
DUCATI DODGES

During last year's ACA short track season, I sponsored and tuned the Yamaha and the Ducati ridden by Rick Woods. Rick finished number 2 in the 100 cc class on the Yamaha and number 1 in the 250 cc class on the Ducati, and thus will carry Number 1 plate this year in the ACA short tracking. Due to my sponsorship and to his riding ability, my amount of Ducati service work has increased quite a bit and I have found it necessary to use the old Yankee ingenuity in the place of some of the expensive Ducati factory tools.

One tool that is a definite must is a degree wheel for timing the engine. The price of the Ducati factory degree wheel holder is beyond the means of the average mechanic, let alone the poor rider who may only use it once or twice. I made one up quite easily out of things that I found around the shop. For a wheel, I used a Triumph degree wheel that can be purchased at any Triumph dealer. The left hand engine shaft on a Ducati is tapped internally with 8mm threads and a small 8mm plug is inserted at the factory to act as an oil plug; otherwise, the big end bearing would be starved for oil. So, when using this tool, never remove this plug. As this shaft is already tapped to 8mm, I took a Suzuki 8mm bolt (Part #BKS 08135 F) to use as the main through bolt which would be long enough to go through the inspection hole and into the shaft and still clear the brake pedal with the degree wheel attached.

Of course, the first problem I ran into was the fact that the hole in the Triumph degree wheel was quite a bit larger than the hole required by an 8mm bolt, so I had to devise a system of securing it and centering it at the same time. Remember, if it is not centered, the reading will not be accurate. After much digging around in my boxes of bits and pieces (stuff that should have been thrown away long ago, but because I always wind up needing something, I never throw away) I came upon a solution using pieces from old mirrors that had been broken and replaced. For a centering device, I used one of the tapered 8mm nuts that lock a Honda or Yamaha mirror in position on the handlebars. The mirror does not have a bracket, but threads right into the lever assembly. To make these mirrors look neat they have given this bolt a tapered finish which works perfect for our purpose. Of course, we now find that the bolt is only threaded partially because this is not meant to be a motor mount bolt. So, we will have to modify it—which will consist of threading all the way down to the head with an 8mm die so the mirror nut will lock against the head. Be sure to get an 8mm mirror nut, as some of them were 12mm. Now we need something to hold the degree wheel while the nut centers it. For this, you can use just a washer and a tube, or anything that will fit over the head of the bolt, but will allow the end of the mirror nut to go inside of it until it centers and locks on the degree wheel. If you want to be neat, I used another piece from a different kind of mirror, it is off a Suzuki mirror and is the piece used to secure the mirror lens assembly to the rod. By taking the bracket apart and taking this piece and drilling out the threads to 8mm, it can be slid down the (BKS 08135) bolt first with the small hole to the bolt head, then the degree wheel is slipped on and the tapered mirror nut is threaded on with the taper first as it threads into the degree wheel and locks, it will also center the degree wheel. Lastly is the installation of the two 8mm nuts at about the location of the end of the original threads on the bolt, these are simply a stop for the tool when threading it into the engine shaft and the reason for two of them is the fact that they are double nutted and locked together as a permanent stop. The artists drawing probably explains it better than I can, but I have used this tool for the last year and it has worked out very good for me.



SUPERGOODIES!
..OKAY..... So you already know about the World's Greatest RACING FORKS ...but are you aware CERIANI also makes the Best REAR SPRING/DAMPER UNITS ? $39 pr.

STEEN'S INCORPORATED box 2276 • alhambra, california 91803
283 • 8229

THAT FUSE IS YOUR PROTECTION

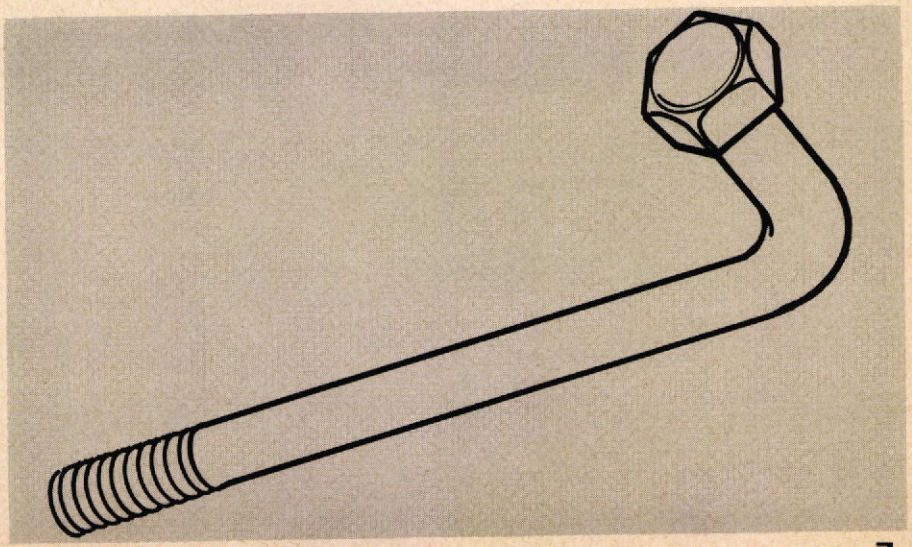
I find that a lot of riders will have a tendency to improvise in a somewhat disasterous way when it comes to a blown fuse on their bike. They will proudly tell me how they got the bike going again by putting a bolt, a rivet or some other solid object in place of the fuse. The fuse is installed on the motorcycle as a safety measure so that if something goes wrong, the fuse will blow instead of all the wiring going up in smoke. If you eliminate the fuse without finding out why it blew, you stand a good chance of not only burning up the wiring, but the rest of the motorcycle as well. If you happen to be out in the middle of nowhere and more fuses are not available, a temporary substitute can be made with cigarette foil. Just peel off two narrow strips of foil from a cigarette (Caution: smoking may be harmful to your health) pack and place touching both ends of the bad fuse, then re-insert the fuse.

LARGE DIAMETER ALLEN WRENCHES

One of the things that seem to bug the owner of an Italian motorcycle is the use of Allen-type plugs in such important places as the oil drain plug and various filler and inspection holes. Where I notice it the most, is when I have a Ducati to change the oil and I find that the plug has been attacked with all sorts of tools in hopes of removing it, such as pliers, crescent wrenches, even a hammer and punch and now it is in such sad shape that dynamite seems to be the only solution. When you ask the customer why he had to vent his inner hatred on the poor lowly drain plug, he simply says he couldn't find an allen wrench that big. What he didn't realize is that when the plugs get up into larger sizes, they are usually 10mm, 12mm, 14mm or 17mm and it is true that it is hard to find an allen wrench that size, but any motorcycle shop that handles European or Japanese motorcycles will have a long bolt with the head of the bolt the correct size to fit into the plug. It is a simple matter to bend the bolt at right angles close to the head and you have a tool to remove even the most stubborn drain plug, providing, of course, some Clem hasn't gotten there first with his water-pump 'Plaars'. This is the same fellow that works over the drain plugs on Hondas, because he doesn't have the right size wrench. A little tip on getting these bolts to use as allen wrenches; if you get them from a Suzuki shop, specify that you want '5' bolts—these are bolts with the Suzuki 'S' emblem on the head which is their way of designating 'strong' bolt or extra hard bolt.

IT DOES HOLD TWO QUARTS

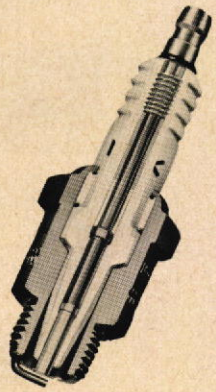
As long as we are more or less on a Ducati kick this month, here is another piece of shade-tree wisdom. I'm sure that at one time or another every Ducati owner has decided to change his own oil. He finds, to his dismay, that by filling the crankcase through the dip stick hole, it becomes practically impossible to reach the proper oil level. In fact, to get the right amount of oil into the engine, the bike must be leaned over as the stand pipe will become full yet the oil level is still incorrect. I solve this by removing the clutch inspection plate (secured by two screws) and pouring the oil in here until the proper level is reached. Try this next time and you will see how easy it is. ■



what's new?

TORCO OIL

Made to perform where the heat is! Torco Oil Co. offers two custom made oils for motorcycles, high temperature lubrication for two stroke and four stroke engines. Torco 2 burns off clean, with no smoke, for cleaner exhaust and cleaner plugs that last longer. Made in SAE grades 30 for oil injection, 40 for mixing and 50 for racing and heavy duty use. New Torco 4 in grades 30, 40, 50, and 60 promises high temperature protection, relief from carbon deposits, and resistance to gum and varnish. For street, trail and racing use. Priced at 95c a quart, oils are also available in drum lots from Torco Oil Co., Sante Fe Springs, California.

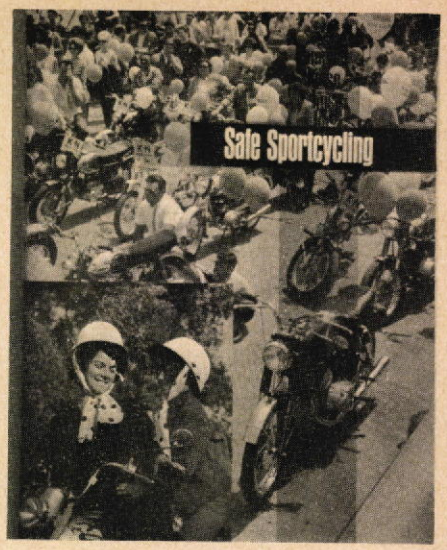


WIDE RANGE NGK

Heart of copper spark plug, new from NGK. A more flexible plug, utilizing a unique copper core center, rather than the conventional iron core centers used by other manufacturers, giving NGK the widest thermal range of any spark plug on the market. Anti-fouling and anti-over heating properties make NGK spark plugs trouble free and longer lasting. Available at better motorcycle shops.

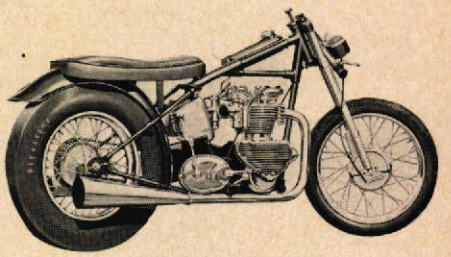
TRIUMPH DRAGSTER

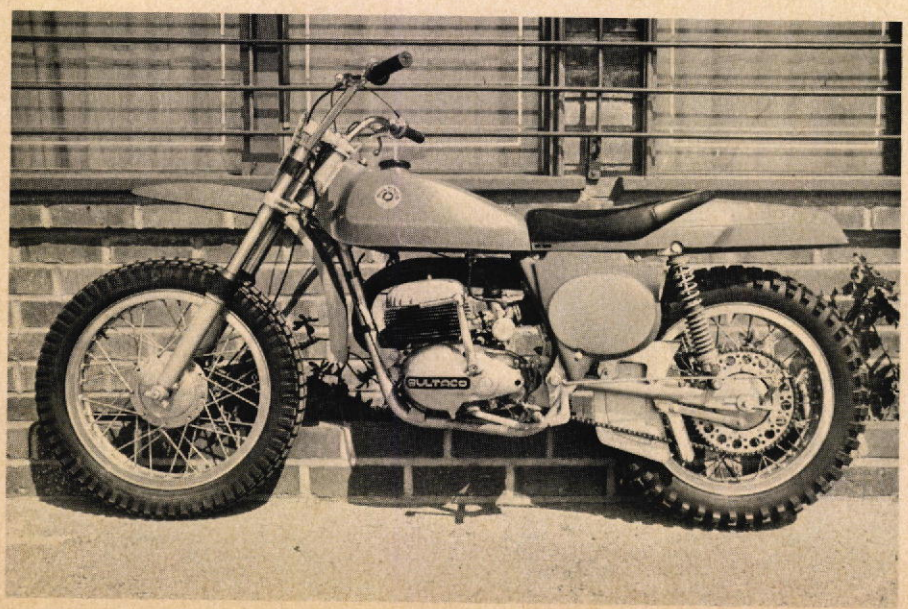
Big winner in the ⅛ scale class from Revell. Triumph 650cc Drag bike with all chrome engine and all the authentic details, including real rubber tires—a Firestone drag slick, competition exhaust system, and fuel tank. All ignition wiring, fuel lines and control cables. Drag bike kit sells for $3.



YAMAHA BOOK

Probably the most comprehensive book to be written on the subject of motorcycle safety is 'Safe Sportcycling.' Covering the realm of riding from the novice to the experienced rider this book has more tips on safety than anything that has come before. The best part is that the book is priced at $1.25. All that is necessary is a letter to the Yamaha Owners Club, P.O. Box 60094, Terminal Annex, Los Angeles, Calif. 90054.





CEMOTO TERROR

Bultaco has just announced their all new Pursang racer. It incorporates a five speed gear box, more tractable horsepower (37, up one from last year) due to a different exhaust pipe and intake tract. It has a two inch longer wheelbase (55½ inch) than before, weighs 225 pounds, down six from last year, more travel in the rear shocks and, for the first time a double row of ball bearings on the drive side of the crank. The gas tank has been enlarged to 2½ gallons and the whole machine is the brightest red you ever saw. More information can be obtained if the local distributor is contacted.

Continued on page 81

HONDA'S CUSTOM FOUR

Honda has actually customized both 50 and 90 cc models with special types of tanks, pipes, handlebars, seats, fenders and trim. There is also a wide new choice of color combinations.

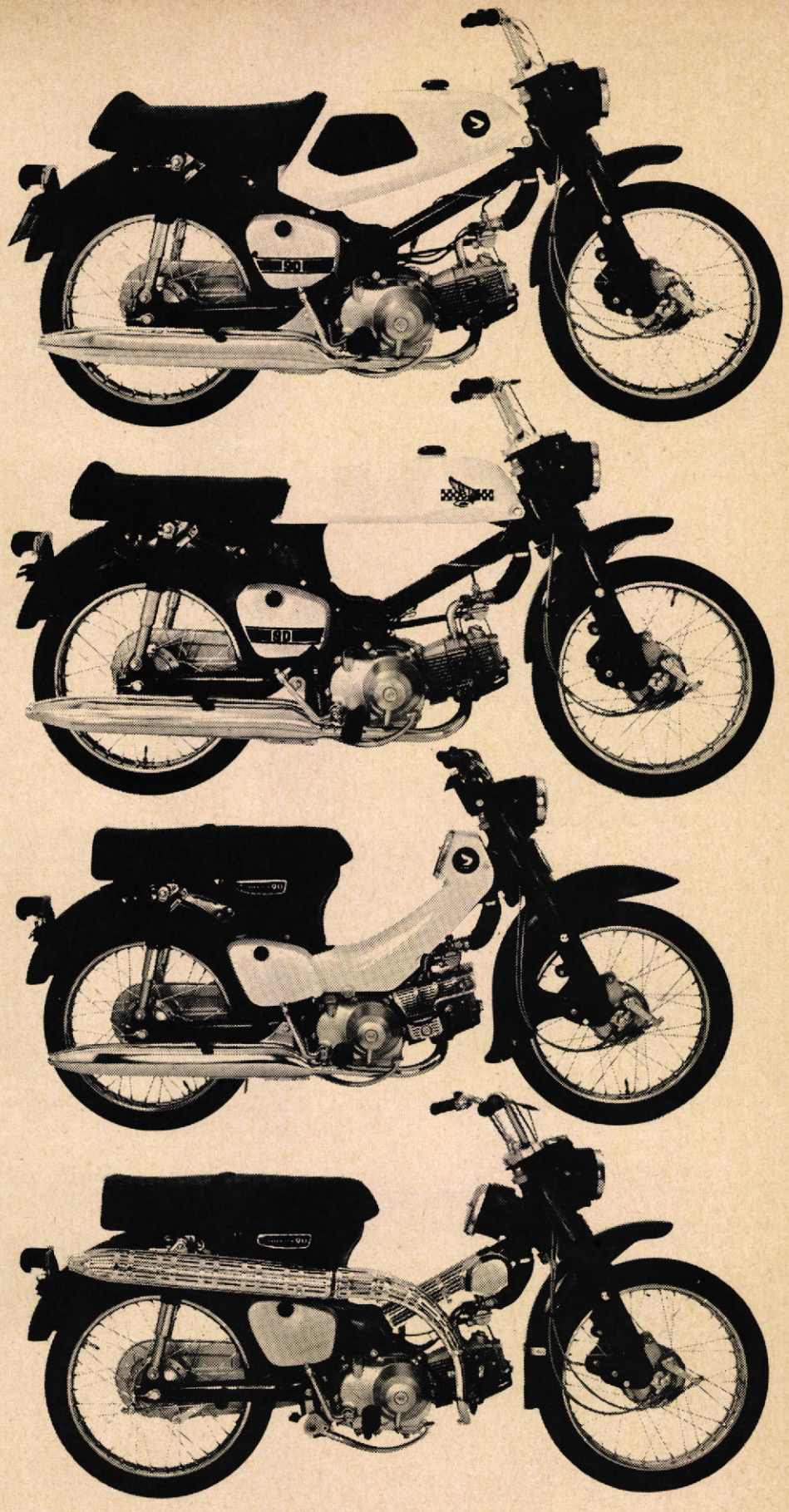
The options and accessories you'd choose are now included and ready to go when you buy the bike.

Take for instance, the 'Roadster. This sporty machine features a new high tank, snappy front fender, a contoured, racing style seat and accent stripe trim. All in all, it's the big bike look at a small bike price.

The 'Rally' has that competition look with its sharp slim-line tank, big contoured seat and high bars. A racing stripe and fuel tank insignia contrast nicely and help lend that custom appearance.

The 'Boss' comes on strong with its snappy front fender and competition type handlebars. Note too, the fully enclosed chain, chrome plated muffler guard and frame cover. An additional plus feature is Honda's famous four-stroke engine and legendary reliability.

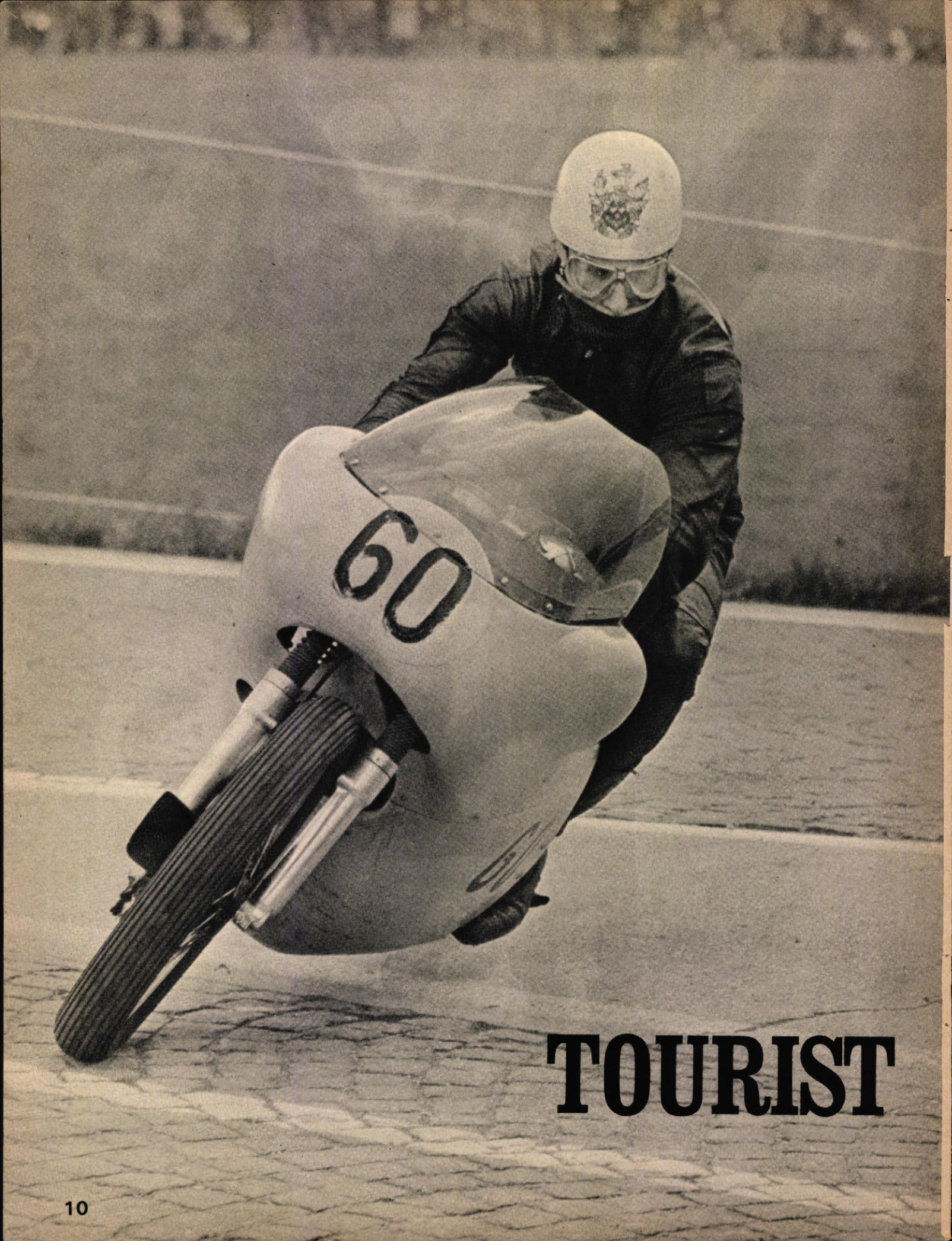
For fans who prefer the classic step-through model, but with a little more styling, the 'Student' is your machine. For even more style, pick up on those wild new color combinations. Check your dealer for prices.



ALLIED CATALOG

The 1967 edition of this famous guide to electronic goodies is yours *free*.

In addition to such things as siren burglar alarms, ham radio gear and car stereo tape players; you'll find quite an assortment of motorcycle accessories. Decorative and practical cable covers in clear or colored plastic; a complete selection of gauges and instruments; timing lights; high quality electrical wire and waterproof terminals are but a few of the items found in this giant catalog. Order your copy free, from: Allied Radio Corp., Dept. CG-6, 100 North Western, Chicago, Ill. 60680 and ask for catalog #260.



TOURIST

TROPHY TIGER

The legendary Norton Manx

by Dave Hetzler

EARLY IN 1950, on a foggy morning, Joe Craig, Head of the Racing Department, stood with a small group of Norton factory engineers in the pit area of a lonely English race track. Out of a company van was wheeled a brand new Norton Manx incorporating, for the first time, a swinging arm type rear suspension.

As a mechanic started the machine the familiar staccato bark of a Norton racing single filled the still air. As the bike settled down to an even 2000 rpm to warm up, from yet another van parked nearby a young rider by the name of Geof Duke emerged, dressed in the familiar leather attire of the road racer. As he pulled on his gloves and helmet, the engineers stood nervously by, hoping that this machine would once again return them to the top of the racing world.

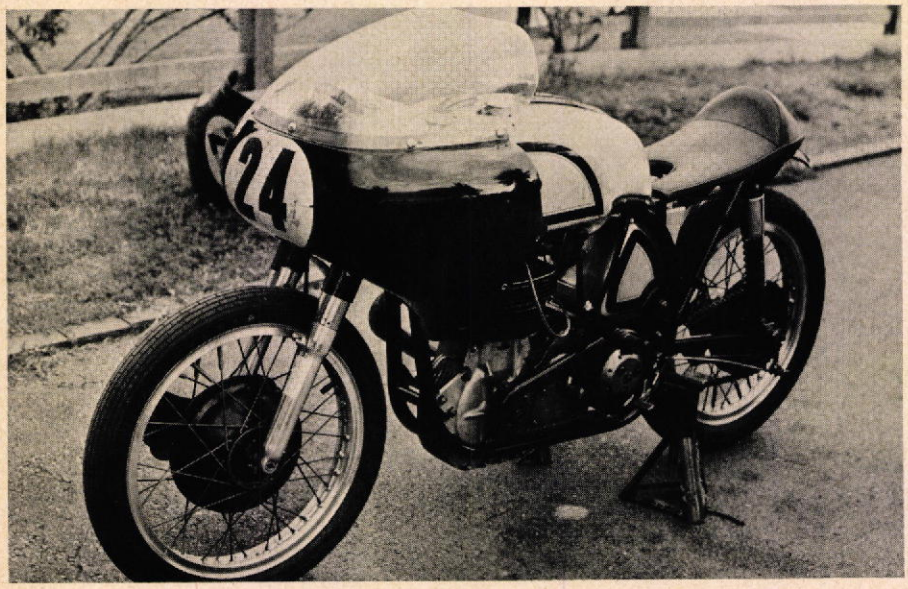
They had a right to be apprehensive, as the previous racing season had been lean as far as Norton was concerned. Even though they had won the Senior TT, the rest of the season was a different story as the Gilera fours, Moto Guzzi's and AJS 'porcupines' simply had more speed than Norton could muster. All the hopes, fears, and hours of late night work were to be realized in the next few minutes.

As Duke slipped onto the saddle, clicked the bike into first gear and accelerated onto the track, many a silent prayer and perhaps even a curse or two went with him. As he went round and round a smile came to his face. This was the most responsive, finest handling machine he had ever ridden. The swinging arm was working to perfection. Not until lap after lap had been reeled off, not until he had broken the track record by over four seconds did he swing into the pit area, let the engine die and return silence to the English countryside. After Duke had parked the Manx and talked to the engineers, Joe Craig detached himself from the group and walked aside, knowing in his heart that once again he had his world beater. Thus the featherbed Manx made its debut.

Norton is a name synonymous with road racing. No other marque has held as many lap and race records. Even though in the past ten years the multi-cylinder 500 cc fire engines from Italy, and just last year from Japan have taken over the senior class, it will take many years of racing before they can equal the triumphs (no pun intended) of Norton.

First and foremost, Norton has always been known for producing the finest handling machine on the racing circuit. This is as true today as it was 20 years ago. The Manx is still the standard by which all other bikes are judged. When John Surtees was riding for MV, he said the Manx was easier to ride because of more tractable power, more flywheel effect. No matter how much horsepower is available, it has to be put on the ground and the combination of Manx frame and suspension does the job better than anything else. It was rumored in the English press that in 1966 when Mike Hailwood signed to ride for Honda he had a Manx sent to Japan for the Honda engineers to study because to paraphrase his words, "The 500 cc Honda handles like a bloody pig." Most of the new special frames being built today are copies of the Norton Manx.

No story would be complete without mentioning the Manx engine. No other design has received as much development at the factory level—but then, this machine had been around since 1927.



With the bottom of the fairing removed the clean narrow lines of the Manx are visible.

Originally, the Manx started life as the brain child of Walter Moore in 1927. It incorporated a single overhead cam with a bore and stroke ratio of 79×100 mm. It proved so successful that in 1928 it was also produced in a 350 cc version with a bore and stroke of 71×81 mm. The machines remained this way until 1930 when Arthur Carroll took over the racing department. In 1931 the three speed transmission was replaced with a four speed unit and the semi-slipper type aluminum piston put in its first appearance. In 1933 more innovations appeared, most notable was the use of an aluminum alloy head and cylinder. The cylinder utilized a cast iron sleeve and the head had the fins cast onto a bronze combustion head. With these machines under them, the factory team consisting of Stanley Woods, Tim Hunt and Jimmy Simpson swept all before them—Woods even winning the Junior and Senior TT for the second year in a row.

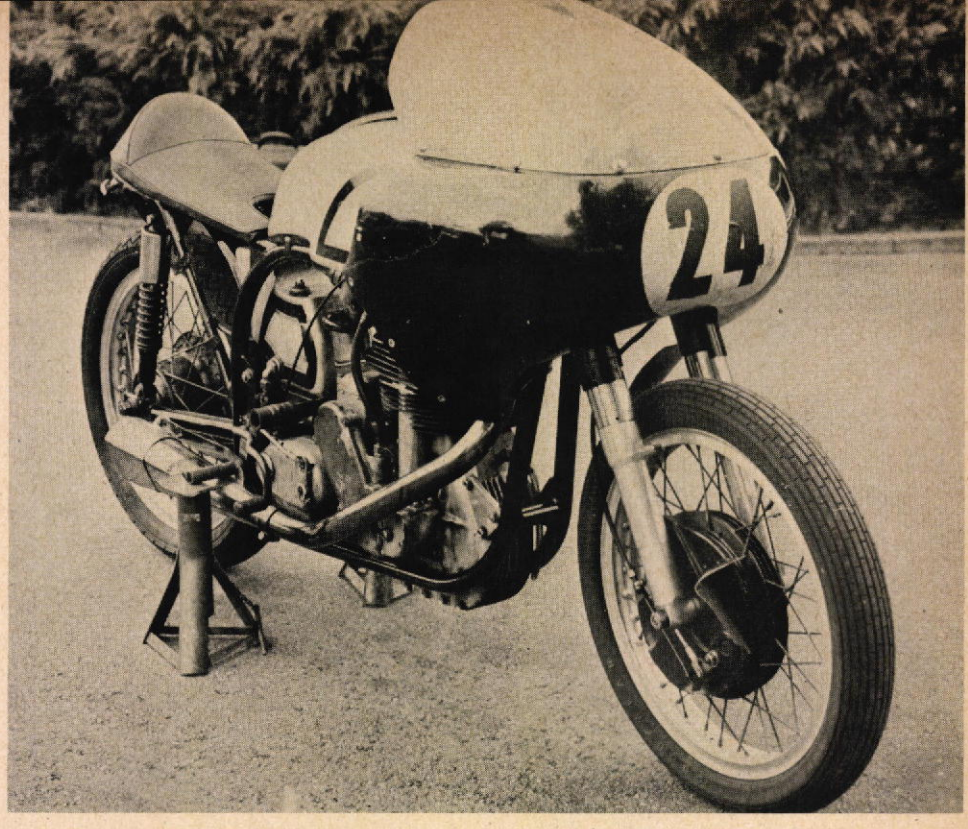
In 1934 more changes came about: megaphone exhaust, two spark plugs, twin spark magnetos and hairpin valve springs. Once again Norton was victorious in 90 percent of the races they entered.

By the time 1936 rolled around the engine was cradled in a frame utilizing the plunger type of rear suspension and also the bore on the 500 was increased to bring the engine up to a full 499 cc.

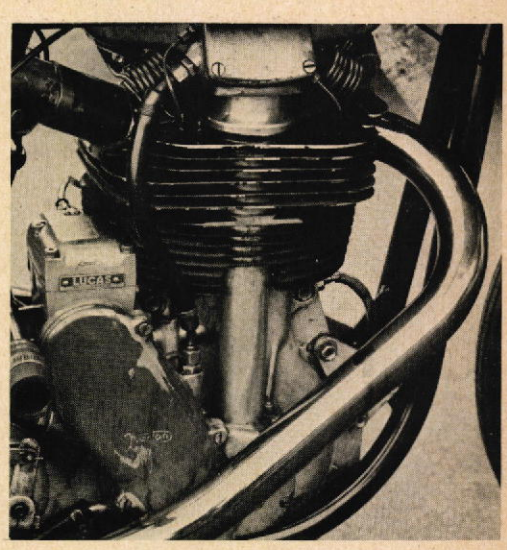
In 1937 came one of the biggest changes when the machines appeared with a double overhead cam engine. More finning was placed around the cylinder and the dual spark plugs disappeared. This was the year that the first 90 mph lap was recorded at the Isle of Man, with Fred Frith in the saddle.

1938 saw telescopic forks appear with both main and rebound springs, but as yet hydraulic damping had not appeared. Despite this, Norton still had the best road holder available.

Feeling the need for more horsepower, the Manx had its stroke shortened from 100 to 94 mm on the 500 cc, and from 88 to 77 mm on the 350. The bores were enlarged from 79 to 82 mm and from 71 to 76 mm respectively. Even these changes were not enough to overcome the fantastic horsepower of the supercharged BMW's. The one bright spot was winning the Senior TT—handling overcame horsepower on this track.



The narrow crankcases fit between the frame members.



Visible in this shot is the magneto, timing chain cover, tower shaft housing and the exhaust header.

After the war, supercharging was illegal, so Norton continued to use basically the same machines as before. In 1948 the twin leading front brake appeared, and in 1949 19-inch wheels. From the beginning of this article you already know what happened in 1950.

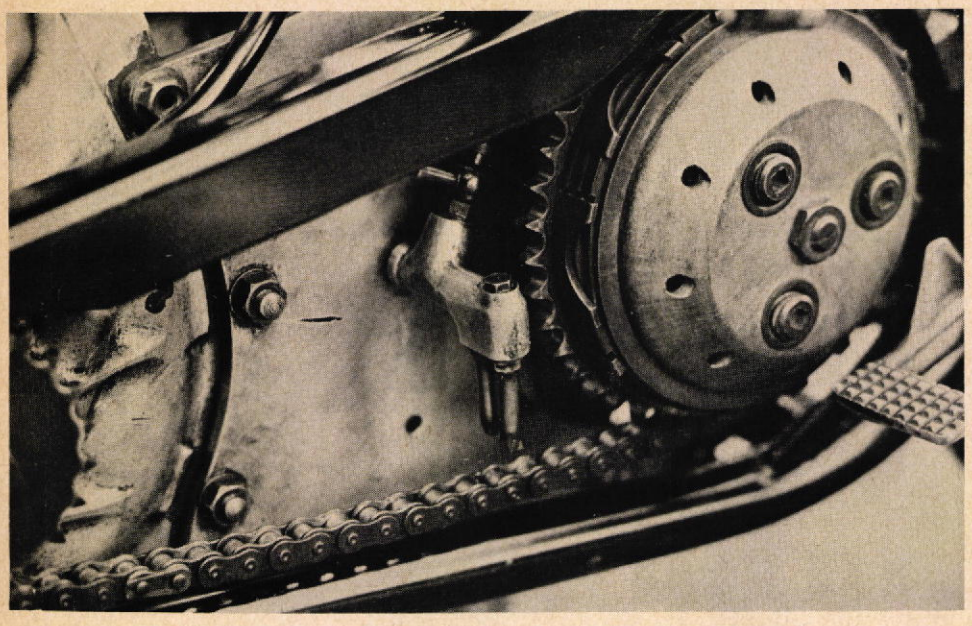
After 1950, more changes: in 1952, bore and stroke ratios were once again changed—the 500 to 85.9×86 mm and the 350 to 75.9×77 mm. Once again Norton won both TT races but did lose the 500 cc world championship to Gilera. 1953 saw Norton design a 'kneeler' for Ray Amm and with this he set a world record for one hour of just over 133 mph.

1954 brought forth two new engines, the 500 with a bore and stroke of 90×78 mm and the 350 at 78×73 mm. For the first time Norton had gone to oversquare engines.

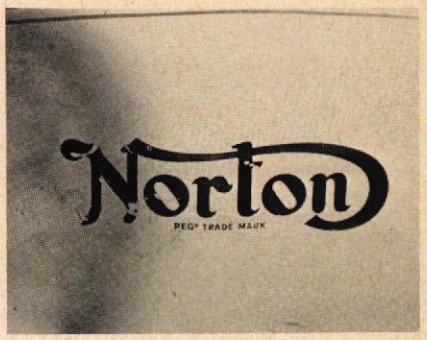
In 1955 came sad news. Norton was withdrawing from racing. Even though the Manx was to be continued for sale to the private rider, the factory felt that the pukka race bikes were becoming too far removed from production machines.

A real shock came in 1963. Norton was discontinuing the Manx. The reason given for this was that all em-

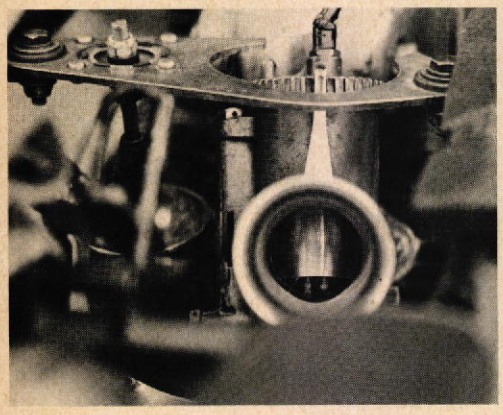
One can see why the clutch on a Manx is of the dry type. The primary chain oiler is just in front of it.



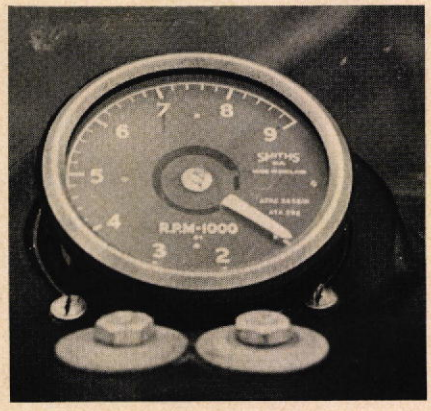
The five gallon gas tank carries one of the most famous emblems in the racing world.



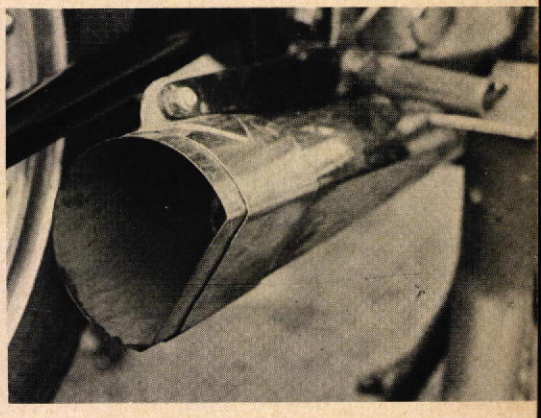
It goes in here—



Gets counted here—



And comes out here.



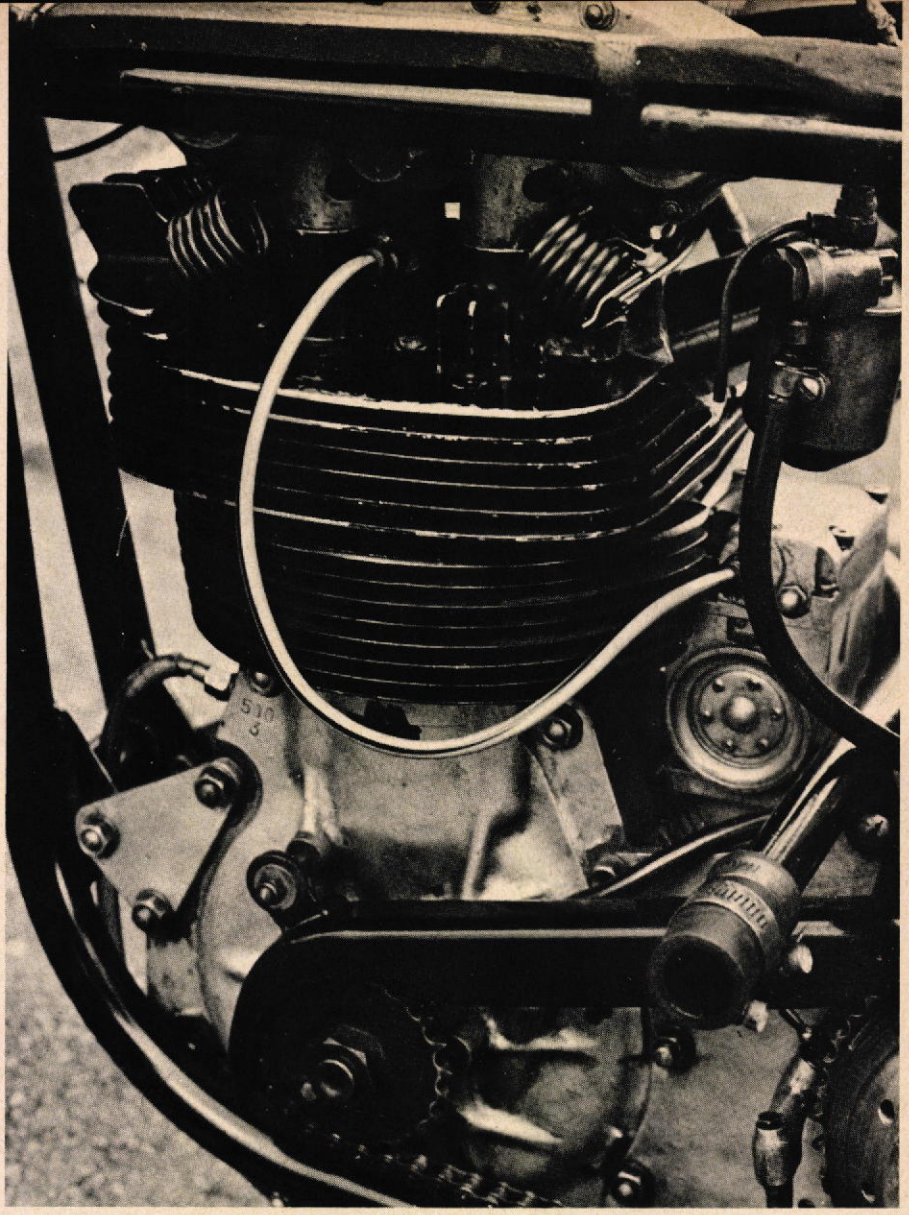
ployees were needed for the assembly lines turning out the road machines. Orders were coming in faster than the factory could fill them. The end of an era was at hand. No more would the likes of Duke, Surtees, Guthrie, Woods, Frith, Amm, McIntyre, or Daniells climb into the saddle and do battle against the best the world could offer.

In spite of this the Manx continues to win races. In the hands of private riders it is still the machine to be reckoned with at short course meetings anywhere in the world. In England, the U.S.A., Italy: the Manx goes on. Slowly, the production twins are catching up. Some standard 250 and 350 cc racing bikes can give it a good run on ultra short courses, but turn the Manx loose where top speed is a must, where handling ability is needed over 100 mph and it still shines. It is said the big single is old and obsolete, but it still wins races and that's the name of the game.

This is a short, impersonal history of the Manx. This article is not so much for the historian as it is for the average bike rider who has heard much about the machine but does not know too many of the facts. I'm attempting to give my views as a club racer who has ridden the Manx for the past five years.

From the private riders standpoint, the best part of racing a Manx is that it takes a minimum of speed tuning to make it run fast. In fact, after five years experience, my tuner, Jerry Roman and I feel the real speed secret is to set it to Norton specs. We have seen other riders spend many hundreds of dollars in having special parts made, hundreds of hours lost trying to redesign port positions, megaphones, valve angles, etc. I also have seen Jerry spend untold hours getting proper clearances, proper tolerances, precise cam and ignition timings. On the race track I can't ever remember lacking for horsepower. To the contrary, Jerry always made sure I had as much or more than I needed. This brings us right back to good handling. The Manx is one of the few machines that handles so well that it gives little

Third gear in the middle of turn #2.



Exposed valve springs are the mark of the Manx. They are placed under cam box. The unit just above the spark plug is the tachometer drive. Both the head and cylinder are heavily finned.

or no warning before it loses traction and proceeds to throw you off and step on you. I feel the only way that a person just starting to race a Manx can learn how far it can be taken in a turn is to fall a few times.

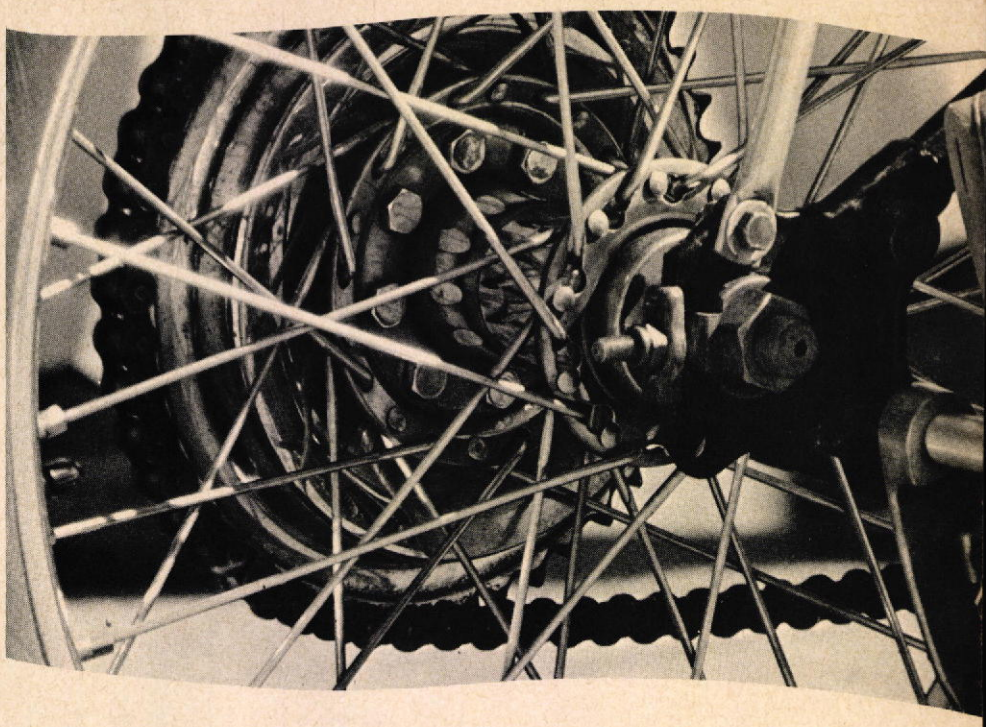
The one drawback to racing a Manx is that in the past three years the spare parts situation has gone from bad to worse. Many tuners are now forced to make their own bits and pieces from scratch.

Let's now go to a local track and use my Manx, vintage 1959, to take a few quick laps to see what it is like. We arrive early in the morning at Willow Springs. Willow is located about 20 miles from any major city, so all is silent as we pull into the pit area. One is struck by its solitude almost immediately. Even though the full length of the track can not be seen from the pits enough is visible to give a good idea. As the Manx is unloaded and warmed up, let's climb into the truck and take a lap around and see where we will be going.

As we pull out onto the front straightaway, we realize the last part of the straight is slightly up hill. At the end we have to turn left to enter the first corner. On the bike this will be taken at 75 to 80 mph. Exiting down a short straight, we come to turn #2. This is a climbing righthand sweeper entered at about 85 and exited at close to 100 mph, along another very short straight to turn #3. This is a very steep uphill left hander taken at 30 to 35 mph. Coming out of three, you immediately enter turn four. This is an uphill right hander that levels out and then starts down hill, off camber. We continued sweeping downhill and to the right. Still turning, braking is started for turn five, which is entered down hill, leveling out and exited up hill. Here we climb and come to six. The road levels out and turns right. Charging over the top, we start down the back straight. Half way down is a gentle left hander that is hardly noticeable, but nevertheless is called turn seven. Through seven, we enter turn eight which is a sweeping right hander that is taken flat out in top gear. There is a very short straight between eight and nine. Nine is a right hand decreasing radius turn that leads you back onto the front straight.

Now that we're back in the pits, let's take a lap on the Manx. Onto the saddle, shift into first and accelerate out of the pits and up the front straight. By the time you reach turn one you are in third gear. Back into second and sweep around in a gentle arc. Down the straight, shift into

Continued on page 76



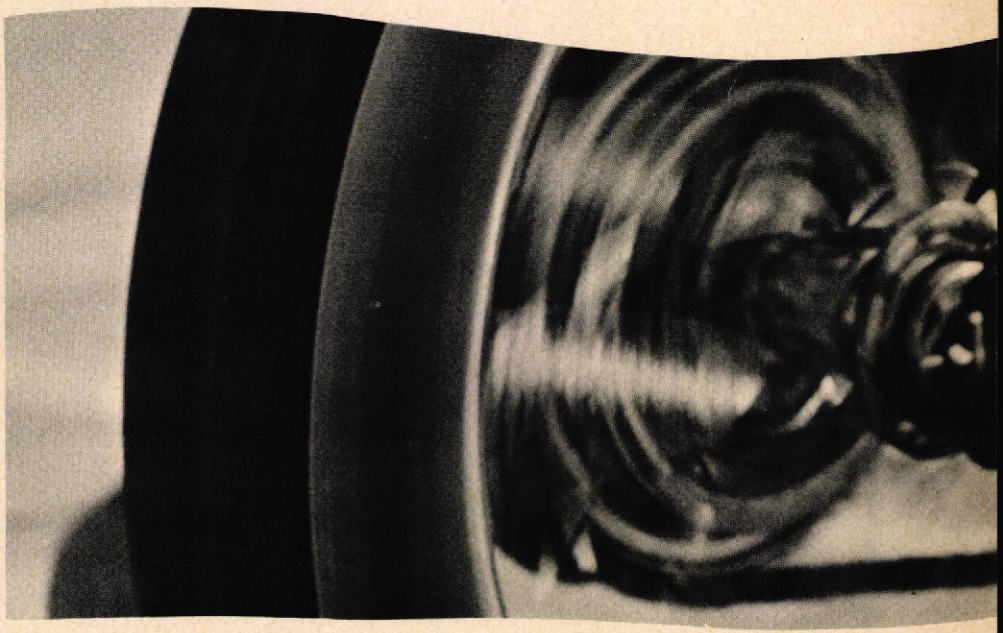
Are you a reluctant dragger?

STEP RIGHT UP!

For tips from a World's Record Holder.

THE BIGGEST STEP any potential competitor makes is getting up the courage to enter a race for the first time. Actually, it's not hard to understand this either. After all, we're all leary of things we don't know much about. Fortunately, drag racing provides good competition for anyone, regardless of what type of machine they ride. It can be a Honda 90, Yamaha or Suzuki 250, Bultaco scrambler, or anything else you happen to have. So how does one go about getting started?

Various strips have certain rules and requirements, pertaining to both the rider and machine. It would be well worth your while to check first and see just what is required, before you go down on Sunday and sign up. You'll have more fun, if you and your machine are properly prepared. There's nothing more frustrating than having to make a change in the bike while at the track without parts or tools. By checking the rules first, you can do all of the necessary work at home at your leisure. The drag strip should be for racing, not rebuilding your bike.



O.K., so now you know what the rules are. The next step is in the preparation of your bike. Naturally, everyone wants to go fast, but resist that urge to strip your bike or build an out and out dragster. You have to learn to walk before you can run. While the more exotic dragsters go very fast, they also require more experience and ability to handle this additional performance. If you start off with your street bike, you'll learn a great deal in just a matter of a few weekends. Regardless of what type of machine you have, there is a class just made for you. Whatever you do, don't feel that your bike isn't competitive. It is. The potential is

by Bob Braverman

there, so it's up to you, as the rider and tuner, to find the combination to be the quickest through the quarter.

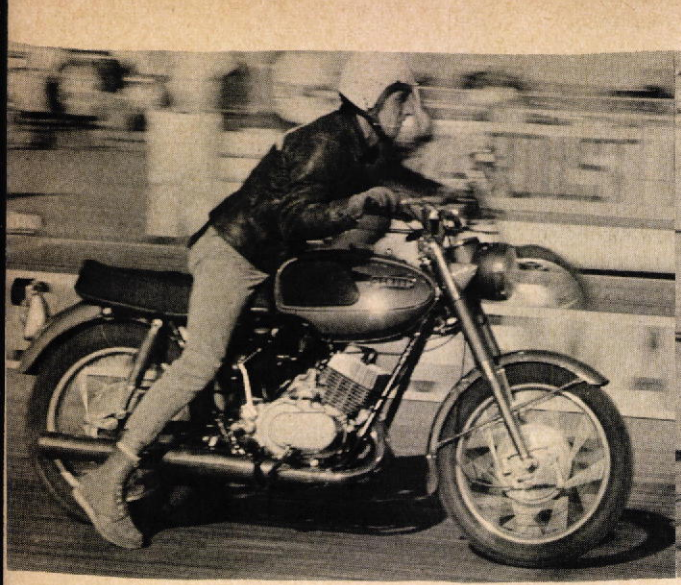
Before we go any further, there are a few very basic facts you must constantly be aware of. Inasmuch as a race lasts only a few seconds, everything you do must be letter perfect. Chances are if you goof, you won't have time to make up the distance lost. This brings up another point—consistancy. Chances are you'll see riders who are not the fastest in town, but they always seem to win more than their share. The way they do it is by riding their bike the same exact way every time. This serves a two-fold purpose. In the process of tuning your bike, all of your efforts will be wasted unless you learn to ride smoothly and consistantly. If your bike is equipped with a tach, use it. If power starts to drop off at 6000 RPM, don't wait till you hit 6200. You're wasting valuable time and giving your competition an edge. While you're experimenting with gearing and jetting and the other sundry items, only by riding the bike the same way every time can you evaluate your work. I cannot stress highly enough just how important this fact is. Also the smaller the bike, the more critical things become. This consistency is very easy to learn, but demands the utmost in concentration every time you approach the starting line.

You should do everything that needs to be done before you leave home. Don't wait to get to the strip before attending to those last few details. The better the machine is prepared, the better your chances are. Start your preparation by cleaning the machine thoroughly. Now check and be sure there are no missing or loose nuts or bolts. If there are any, tighten or replace them immediately. This way you won't forget later. Check the chain tension and oil level in the gear box. Don't forget to check and be sure the steering head bearings are adjusted properly. There should be no play whatsoever, but the forks should turn easily. Remember that you're going to be going much faster than you normally do on the street, and any handling deficiency will show

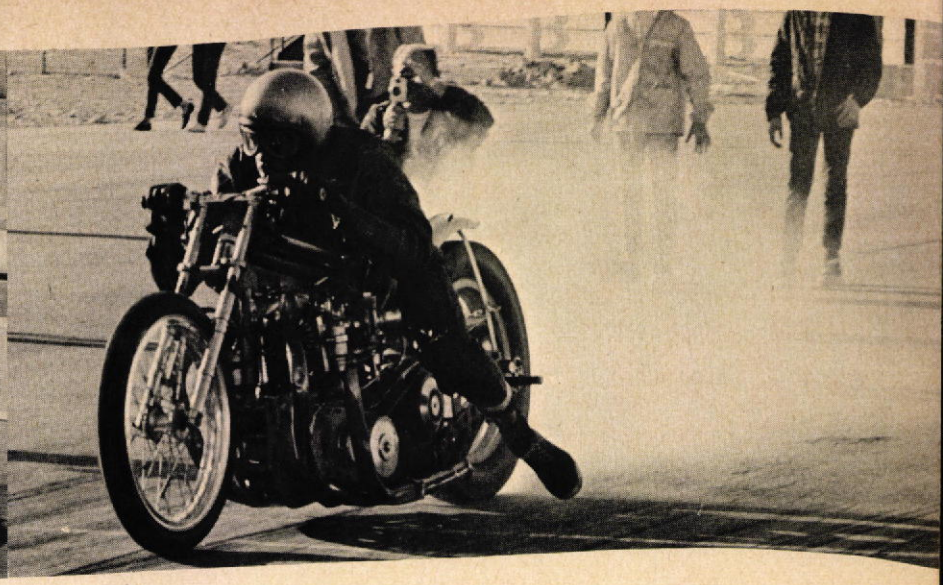
up quickly at high speed. The better the bike handles, the less you have to think about. You can devote all of your effort and attention to getting through the traps quickly, instead of trying to keep the machine going in a straight line. When you're satisfied that the forks are in good working order, check front and rear wheel bearings. The wheels should spin freely with no trace of sloppiness. A bad wheel bearing causes drag and possible handling problems.

I would like to pass along some information to those of you who may want to change the exhaust system. If you own a two stroke, do not, I repeat, *do not* put expansion chambers on your machine. They sound very racy, but unless the engine is modified to take advantage of this type of exhaust system you can plan on losing performance. The mufflers that came on your machine are much more desirable for drag racing (or any other type of competition). If your engine is modified, then this is another matter, but as long as the engine is stock, avoid tuned pipes. Also tuned pipes will mean you must transport your machine on a trailer or truck since these pipes are illegal on the street. I wouldn't worry about getting more power until I was getting all I could from the stock bike. Another factor to consider is that a hopped up engine is fussier to tune and keep running properly, so until you have learned to ride consistently more power isn't really a good idea. Don't plan on setting the world on fire the first couple of times out. Just learn to ride smoothly. There is a great deal to be learned from watching others. You can see what mistakes they are making, and then you can avoid these yourself. Don't be afraid to ask questions. You'll find most competitors are more than happy to answer any queries you may have. The sport of drag racing is an easy one to learn, but you should try and learn as much as possible the first few weeks. After that, you'll find things come very easily. It's like learning anything. Once the ground work has been laid, you can move up to more advanced things, but without the proper ground work you are lost.

Chances are, you'll lose the first time out. Plan on it. If you should win, great. But don't count on it. This brings up another point. Lose gracefully and don't be a complainer. If you lost, you lost and there's no sense in complaining. Just do the best you can, and before you know it you'll be taking home the gold. I've found that the people who do the most complaining are the ones who usually put up a poor showing. They spend all their time running around telling everyone how they were robbed, or how the engine quit, (chances are they had forgotten to turn the gas on) or some other excuse why they were eliminated. If you keep in mind that each race produces one winner and one loser then you can see that it's very difficult to get to the top of the heap quickly. It takes practice. A lot of the people who win consistantly don't always have the fastest machines, but they



Once you are staged, "Don't Move!" Staging and timing lights are in the foreground; these are mounted lower than most. Yep, that's the Murray & Cook super-fueler, 'Flustration.'



Practice coming out of the hole smoothly and quickly. Consistency will pay big dividends in the trophy department. Yamaha rider leans into it to counteract weight transfer.

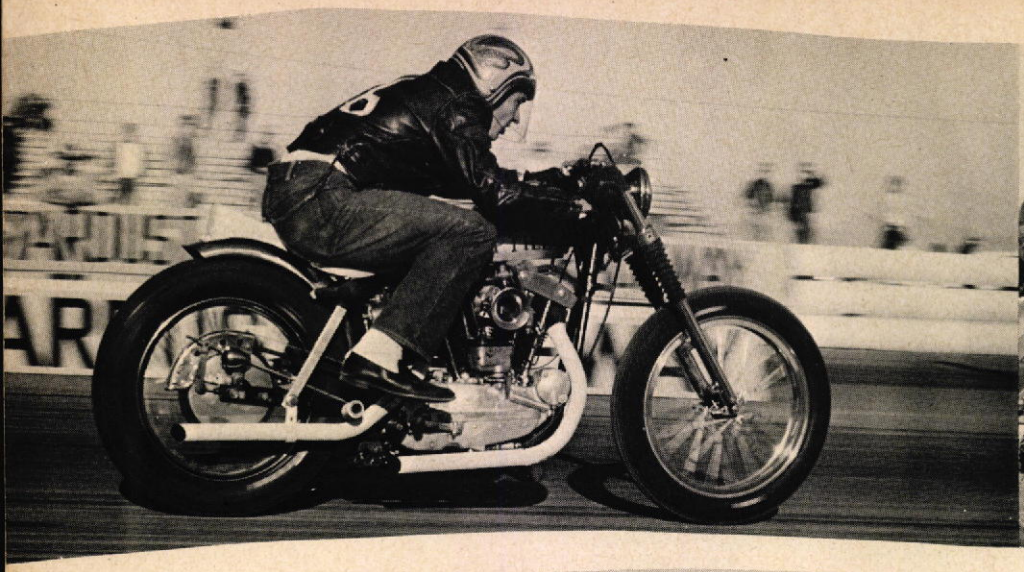
A seasoned (or special) tire as on the Perry & Scott twin Triumph, will provide plenty of bite. Most strips use a high-traction surface but beware of oil, etc. on the line.

know how to get the most out of what they have. And chances are you wouldn't even know these guys were around if you didn't see them. They spend their time perfecting their equipment, not running around socializing.

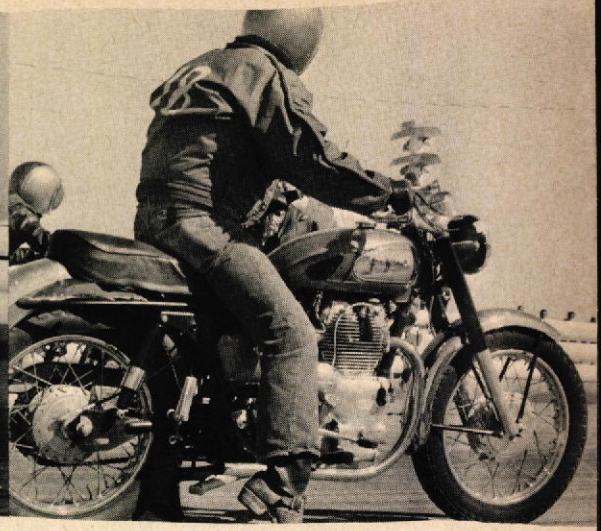
Let's get back to the machine itself. As I said before, the better the preparation job you do at home, the less you'll have to worry about at the track. Be sure the fuel is fresh and the plugs are in good condition. The carburetors should be cleaned and the timing set. Two cycle engines are very sensitive to ignition timing so do the best job you can. "That's Good Enough" isn't good enough. Strive to do the best work you can, not just something to get you by. This attitude usually separates the winners from the losers. Tires. Here's a subject that could fill a book. However, for street machines this area, fortunately, is not a critical one. Be sure your tires are in good shape. If they're not, replace them. I've had great success with Dunlop K70's. Don't make the mistake of getting the biggest tire obtainable either. This will cut down your performance. Remember that the tires are just like flywheels, and the larger the tire, the more power is required to get them turning. As a rule of thumb, any bike 100cc or less can use a 2.25 tire, under 200cc can use a 2.50, a 250 bike can get by with a 3.00, a 500cc machine will use a 3.50, and in some cases a 650cc bike can also use a 3.50, but most of the 650 powered machines use a 4.00. If the tire is worn then you'll get a bigger footprint on the ground, and as a result get a better bite. Tire pressure is very important to good performance, so try various pressures till you find what is just right for your own particular machine. One little trick to help you get better bite is to substitute rigid arms for the rear shocks. These can be made from bar stock or tubing. By doing this you'll be able to take advantage of the weight transfer when the clutch is dropped home. Instead of some of the power being used to compress the rear shocks, all of it will go to the rear wheel. And this is what we're after. If you ride your machine to the drag strip you can install these arms there. It only takes a few minutes.

Take off anything on the machine that isn't needed, and the rules will allow. Every ounce you save will be to your advantage, that's that much less weight you have to get moving.

Now what about you? First off you'll need a helmet if you don't already own one. All I can say is get a good one. This is THE most important piece of protective gear you'll need. Avoid those cheapy type helmets as they afford very little, if any, protection. Plan on spending 25 to 50 dollars. And be sure to get a full coverage type. You'll also need a leather jacket. Avoid the imitation leather type like the plague, because if you come off, the pavement will scrub this material away instantly. I've seen this happen more than once. If you don't already own a leather jacket, buy one that is not too heavy. Since most areas of the country race in the summer only, a heavy jacket will only make you uncomfortable on those hot summer days. I've found that Sears sells a good line of jackets for 15 to 20 dollars. Surplus type goggles are good, but because they use plastic lenses you should carry an extra lens with you, Just in case. When the lens becomes scratched, replace it. If you race at night your vision becomes even more critical. If you choose to purchase goggles with glass lenses, be absolutely certain that the glass is shatterproof. If you don't,



Once out of the hole, concentrate only on the job at hand. In dragging, there's just no time for dreaming of the hole-shot that might have been. Above, the 'Reptile,' a quick H-D.



Keep on your toes. Watch that Christmas Tree and concentrate on that last yellow light. If you see the green light come on, "Brother, you've just lost!"

there could be some dire consequences. A couple of weeks ago a rock struck my goggles and fractured one of the lenses. Had the glass been anything but shatterproof, I could have lost an eye. Some riders prefer shoes, some prefer boots. If boots are more to your liking, be sure to get the lace up type. In an emergency they can be removed quickly without disturbing your foot. Gloves are a matter of personal preference so I won't dwell on this, but be sure they give you the protection you need. If you plan on getting leathers, there are two types you can consider that will give you maximum protection. First are the two piece leathers that have a zipper connecting the jacket to the pants. If you use the standard two piece suit there is always the chance the jacket can ride up and expose your tender skin to the pavement. A pavement rash will quickly follow. The reason you wear leathers in the first place is for protection, so doesn't it make good sense to keep your body surrounded by leather all the time? I think so. The other type to consider is the one piece leather suit. This is the type you see road racers wear. They generally fit a little better, and as I said, they're one piece so you get maximum protection. And there's no point in wearing protective clothing of any type unless you do get maximum protection. Right? The chance of you ever needing protective gear is extremely remote, but the possibility is there. Drag racing is about the safest form of motorcycle competition you can participate in, but there is always that thousand to one shot you need that helmet, goggles, gloves, boots or leathers. The motorcycle can be replaced, but you can't, so it's better to be prepared.

By now you know how to prepare yourself and your bike for that first trip down the 1320 feet of asphalt. But there are still some things you can learn here to save yourself a lot of time and effort. Most strips use some form of light system to send each pair of competitors on their way. Basically there are two types most commonly used. First is the Christmas Tree which is nothing more than a series of lights mounted on a pole. These lights come on one at a time (starting from the top) at regular time intervals. At the bottom of this row of lights you'll see a green one. The rest are usually orange. The theory is that when the green light comes on you go. But if you wait for the green, brother, you've lost. Why? Because, in 99 out of a hundred times you can leave when the last orange light starts to fade away. You can go and not "Red Light". Just below the green lights you'll see a red one. This red eye comes on if you leave too soon, and then you're all through. A red light is to be avoided at all costs. Not only will you incur the mirth of your competitors, but it's also very frustrating. What you're actually doing is beating yourself, and this is not the cool thing to do. Practice during warm up runs to find out just how close you can shave the lights without incurring the wrath of the dreaded red eye. The other light system in use today is the L-L type. In this system you have no chance of second guessing. There are only two lights. An orange and a green one. Of course, there's that ever present red one too. When the orange light comes on, get ready because any time after that the green one may appear.

You see all kinds of bikes. This Greeves looks like a desert bike that took a wrong turn and wound up at the drags. There's a class for everyone, no matter what you ride.

Whatever you do, don't try and leave before the green starts to glow. Many strips have signs warning you that if you leave before the green, you're disqualified. There are some strips that employ the L-L system, and you can leave on the orange, but this is rare. Whichever system of starting your local strip uses, study it carefully and make it work for you. Remember one very important fact—it's far better if your competition beats you than the red light.

Now you're ready for that first ride. Let's say your local strip is using the Christmas Tree starting system. Most strips employ some form of staging lights. This is to let you know when the front wheel is on the line. Once you're properly staged, DON'T MOVE. If you do move before you should, the red light will appear. A lot of people lose races because of overstaging. One way to avoid this is to use a couple of fingers in the front brake during the light count down. I don't start to concentrate on the lights till the tree is half way down. I do this because I've found my maximum concentration time is about 15 seconds. If you concentrate as intensely as possible you'll find that things start happening in slow motion. You've all heard that old bit about the race being won or lost on the line. This is especially true in drag racing. Because of the very short duration of time involved, the start is extremely critical. Every foot (or even inch) you can get on your opponent is just that much more distance he's required to make up. If we may digress for a moment, you'll remember we said before that not always the fastest bikes win. Many times a slower bike with a sharp rider aboard will beat them almost every time. A good rider knows just how close he can shave the lights without getting the big red apple.

The method used to get out of the chute quickly varies considerably from machine to machine. On a small bore bike (under 200cc), the chances are you'll have to slip the clutch out of the hole. On the larger bikes you can drop the clutch when the time is right. It's a good idea to lean forward as much as possible to avoid lifting the front wheel. It's always best to break the rear tire loose to build up the revs quickly. On the small bikes you don't have enough torque to do this, so you must learn how to get that clutch out quickly and smoothly without losing RPM's. Each shift should be quick and crisp. If your gear box is somewhat reluctant to engage the next gear quickly, check and be sure the clutch is disengaging properly. A dragging clutch will prevent smooth shifts, and the chance of missing shifts is a lot greater. Some bikes can be shifted quicker than others, so find out just how fast you can shift yours without missing the next cog. Try and leave the throttle on while going through the gears, you'll get there quicker. Your machine should be peaking as you go through the lights, if your machine is 200cc or larger. Chances are pretty good that if you have a smaller bike you may have to gear so the machine will peak out before you actually cross the finish line. The reason for this is quite simple. The smaller bikes do not have a great deal of torque, so you must get going as quickly as possible during the first ½ of the strip since you don't have enough power available to accelerate quickly at the higher speeds. One of the advantages of a small bike is the light weight, so if you take advantage of this factor and get as much acceleration as possible during the first part of the run than you'll get a lower elapsed time. Don't worry about getting high top speeds. Just concentrate on the e.t. Getting there as quickly as possible is the key to success.

By now, you should have enough basic information to go out and compete successfully. These things you have read will become second nature after a couple weeks. Drag racing is a lot of fun, doesn't cost a lot of money, and no matter what type of a bike you have, there's a class for you. All the words in the world can't make you a good drag racer, but at least now you have a good idea what it takes. The rest is up to you. ■

CLOTHING GUIDE

(part two)

Threads for Competition

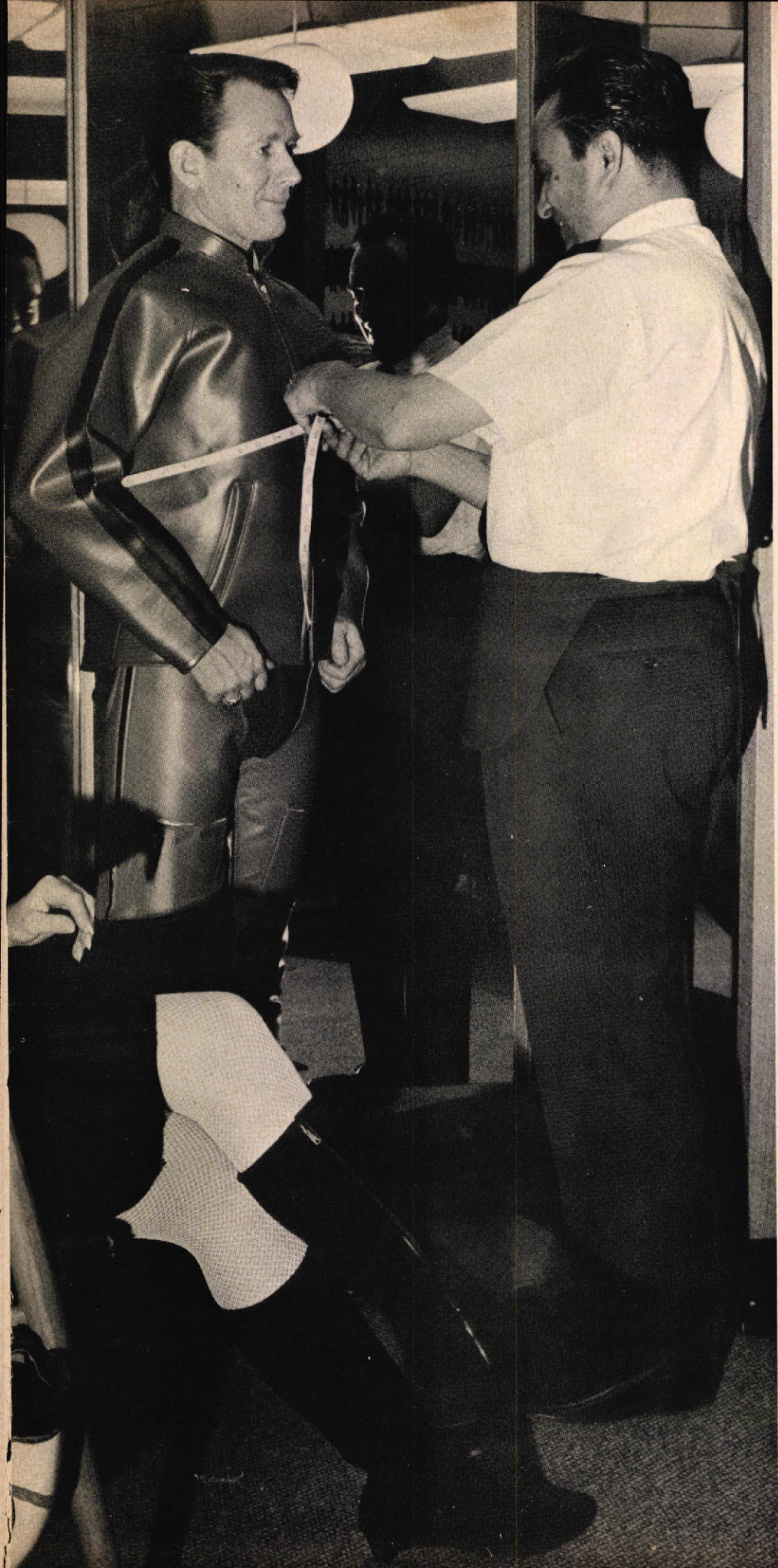
SINCE THE DAY man traded his trusty steed for a two-wheeled vehicle called 'motorcycle,' that he would learn to know and love, he acquired not only a new and exhilarating mount upon which he might transport himself and a small amount of goods from place to place, but lo!—a quick, compatible means of competing with other men for glory and for goodies!

No 'Rozinante,' this quick new mount, he also acquired a set of self-protection problems, and therefore needed clothing to insure himself against the slings and arrows of 'stepping off at speed.

Historically man has protected himself with a variety of things, from war paint and feathers, to hand hammered metal. But, the most enduring material used for centuries, and still used today, are the hides of animals.

Competition riders, both track and trail variety need maximum protection—protection that only the most durable of materials can provide. Black leather clothing, currently representing the symbolism of 'all bad,' is merely an offshoot of the traditional motorcyclist's competition garb, and is still the best for warmth and protection. (Even leathers, however, now come in a variety of bright colors)

'Imitation animal' or naugahyde is coming close to replacing those traditional garments. These substitutes, are becoming popular particularly because of price structure and a wider



WHAT THE WELL DRESSED RACER WILL WEAR: *Custom fitted, jacket and chaps are in extra heavy duty vinyl, with contrasting racing stripes (no extra cost) from Endura of California. Motorcycle jacket is priced at $16.95, chaps are $14.95.*

variety of color combinations, even though they do not have the durable qualities and breath-ability of real leather.

Two piece leather suits, have been joined by a new, and popular one-piece leather racing suit. Close fitting and comfortable, many riders feel that if offers a safety factor two piece suits do not have, that being, in case of a spill and slide, the jacket will roll up and expose the skin to possible injury, where in the case of the one piecer, it will not.

For all types of track and drag racing, competition 'leathers' are a must. A jacket should be chosen that will be durable, leather or leather substitute, but not so heavy and unwieldy as to inhibit the action of the arms. It should fit close to the body but not bind at waist, neck and elbows. Sleeves should not slide up to expose the wrists, and should fit snugly with a zipper closing. A custom fitted jacket may cost a little more initially, but after a few hours of hot, hard riding, the few dollars saved on an ill-fitting off-the-rack garment will seem hardly worth it.

Fitted leather pants or chaps, both padded and un-padded offer top protection for limbs. Zippered chaps win out in many cases because of their easy-on, easy-off qualities. Remember that you have only one head, use it! Get the very best possible protection in a full coverage helmet. (See May issue of CYCLE GUIDE for a complete listing of helmets).

With the addition of a pair of heavy leather boots, such as the legendary 'Big Johns' and a pair of gloves (preferably leather, gauntlet type), goggles, and you're in the racing business. A rule of thumb in buying competition gear is 'Don't cheat yourself,' the money you may save, on an inferior garment, you'll spend in convalesence.

The well dressed trail rider, has a little more versatility in choosing his attire. Needless to say, the dangers are still present, but 'brush busting' of all varieties and hill climbing may be

THE WINNERS! *(left to right) Jacket for trail or street, in Genelle, lined polyester material, with the feel of glove leather; available with or without fur collar priced at $27.95. Wild racing colors and combinations of stripes are available in the motorcycle jacket and chaps fashioned of heavy duty vinyl suede. Jacket is priced at $22.95 and chaps are $19.95. Trophy girl is wearing gold Marshmallow vinyl cape, miniskirt and thigh-high boots. (This outfit to be reserved for more 'sensational' types of competition, not recommended for the track!) Cape is $16.95, miniskirt $10.95, boots, $20.95. All from Endura of California. For the desert faction, glove leather, in-boot, padded pants from Milne Bros., Pasadena, priced at $49.95. Multiple knit shirt is a new addition to Steen's, patterned after an English racing shirt, it is completely flame-proof and will be available in a wide range of brilliant colors with an insignia, U.S. racing stripes, and the legend, 'Approved for Competition. Shirt comes with extra-long tail and comfortable square collar, and should most certainly, replace 'Bullshirt' and other less tasteful products with its popularity. Around $8.*

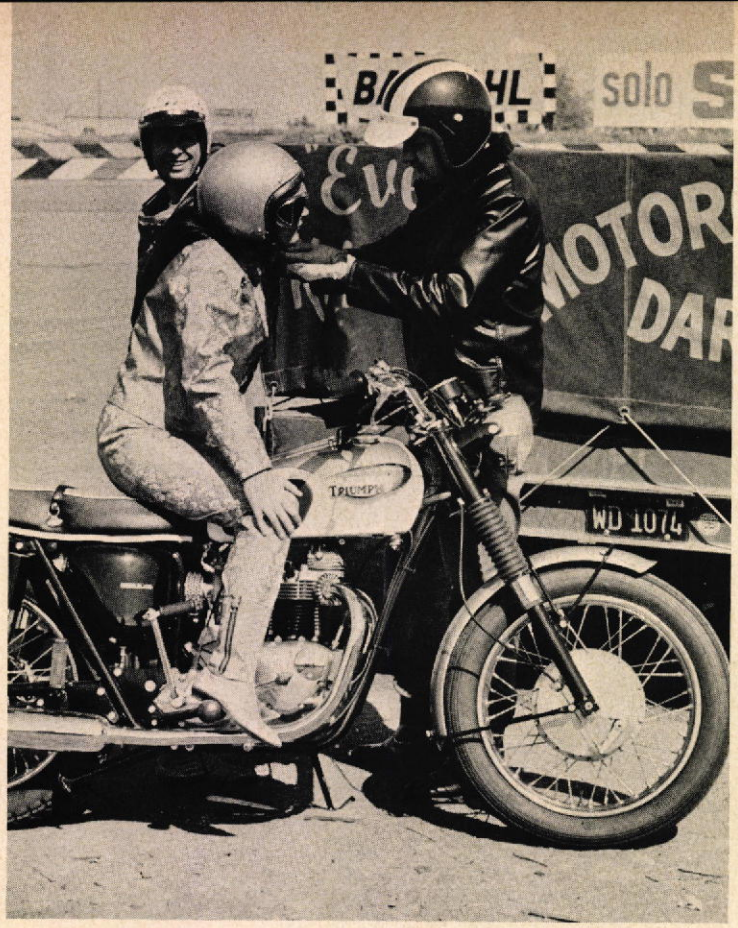
IN THE OLD TRADITION *(left to right) Black leather—in a one piece racing suit. This one is a Japanese import, custom made, but domestic, manufacturers are producing them and they are priced around $100. Traditional two piece leather suit is from Milne Bros. in Pasadena, and is manufactured by Cal-Leather. Available padded or un-padded, with or without lining. Shirt is $35.50 (un-lined without padding) pants (unlined without padding) are $36.50. Colors are available at Milne Bros. on special order.*

accomplished in a different type of armor.

Tough denim jeans withstand a spill on the dirt with ease and adequate protection, and a sweat shirt, or denim action back jacket over tee shirt, should suffice for warm weather in the wilderness. Care should be taken to obtain a good pair of high boots, covering the ankle, and all clothing should be free from loops or straps that might possibly cause a sudden change in direction for the rider by catching him unaware and—alley oop!

A waterproof Barbour-type suit is excellent for wet weather. Rubber suits are keen for skin diving and water-skiing, but for motorcycling —impossible. Nylon, padded and waterproof ski jackets offer good protection in the rain and are extremely durable. Consider the 'schussboomer' zapping down the slopes through sundry obstacles, such as trees and rocks, his clothes are ideal for desert riding.

Within the following pages are various types of competition clothing that is readily available from national distributors. As weather conditions and areas throughout the country are so opposite, each rider may wish to create his own protective covering as he wishes, to suit his own particular style and preference. An applicable motto for choosing clothing for the sport comes from that famous group of good guys—"BE PREPARED."

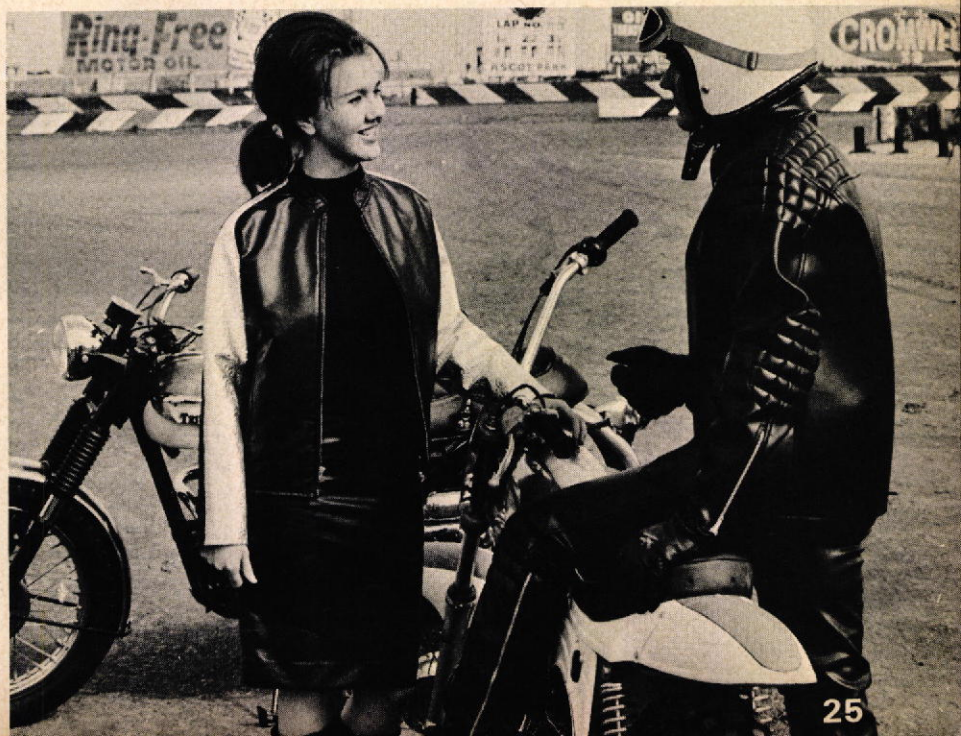


FOR DAREDEVILS, ONLY! *Gold brocade outfit in vinyl from Endura is ideal for show clothes—for anything from, (whatever happened to the Motordrome) precision riding to hurtling five freight cars of bananas like what's-his-name. Dupont's finest vinyl brocade, in a variety of colors, the jacket is priced at $25.95, capris at $14.95 and boots, also in brocade are $11.95.*

***'REALLY DARLING,** every girl should have a hobby!' Competition get-ready, for the distaff side. Action jacket and pants in white vinyl by Endura of California. Jacket is completely lined and has a Talon zippered front, available padded or un-padded in a variety of colors as well as 'Good-Guy White,' shown here. Boots are slip-on 'Big Johns' from Steen's. Jacket is priced at $23.95, pants, $13.95 and boots, $32.95.*

***NOTE:** All prices listed in the Competition Clothing Guide are subject to change, some options available at extra cost. Inquiries should be made directly to the dealer or manufacturer. Tell them you saw it in Cycle Guide!*

***TO THE VICTOR GOES THE SPOILS.** Padded racing jacket with zippered sleeves in heavy duty vinyl. Resilient foam padding is assembled with doublecross stitching for durability and protection. Padded and lined, jacket is priced at $22.95. Padded racer pants are priced at $20.95. The 'spoils' in this case, the attractive young lady is wearing Genelle (polyester), a soft and comfortable material, excellent in this combination with Marshmallow vinyl for a club jacket, priced at $25.95. Matching skirt is priced at $10.95 and high-rider boots are $15.95, all from Endura.*



***DESERT ACTION** calls for a heavy duty, but not heavy jacket. Shown here are Endura's action jacket in vinyl suede, lined; with a zipper front. Available in olive or beige, priced at $25.95. Sport jacket (right) in vinyl suede with large patch pockets, comes with or without fur collar, priced at $27.95.*

CROSSROADS
SLIPPERY SURFACE
CAUTION
30Km
SPEED LIMIT
BUMPY ROAD
...ON TOURING
FILLING STATION
BEND
NO TURNS
DANGER
BARCELONA
WIEN
ROMA
INNSBRUCK
COMO
TIROL

EUROPE

by Al Hall

part two

DON'T EAT ANY ham, ram, lamb, spam, bull, bear, boar or baby beef. Stay away from the fresh fruits, vegetables and whatever you do, don't drink any wine, beer or water. You have probably heard all this and more from friends who have traveled overseas and are recounting their experiences to you. Naturally, if you follow these foolish admonitions when YOU tour Europe, you'll quickly starve.

Why does every veteran traveler (you're a veteran after six weeks abroad even if you don't leave the hotel) caution you about eating this or doing that? It's probably because of their own misfortunes in these self-same areas and nothing to do with any overall judgment. Obviously, there are things to avoid and there are things you shouldn't miss for anything, here then, is a capsule list of tips presented country by country.

ENGLAND swings as the song goes, but that means *all* of England, not just London Town. For instance, a trip along the coast will reveal some of the most magnificent scenery you can imagine. Inland toward Stratford on Avon, Coventry and Nottingham unfolds some of the very neat, very picturesque English countryside. The towns and hamlets follow one another and some of the names are familiar, but the sights won't be. If England is beautiful, then Scotland is more so. However, I've always thought of Scotland as masculine and rugged. Not literally, mind you, but there is an unspoiled look and feeling of endurance. Camp sites are rather sparse but accommodations are plentiful and inexpensive in the smaller towns. If you ever go across the sea to Ireland, you'll know why

You'll see plenty of thatched roofs in England, Ireland, Scotland and Wales.

The neatly trimmed countryside between Liverpool and the Midlands has few rivals.

Stockholm harbor is one of the most interesting and busiest in the world.

The author, astride a BMW fitted with special eight gallon gas tank. It's often a long way between stations.

Although Europe is changing at a great rate, there are still many places left unspoiled.

Just one of perhaps ten huge beer tents at the Oktoberfest in Munich, Germany. Recognize the brand?

the Irish brag so often about their country. Its beauty is legendary and so is the Irish hospitality; both legends are well founded. If there is a city or town in Ireland that hasn't been included in a song, someone is slipping. My favorite is Kildare.

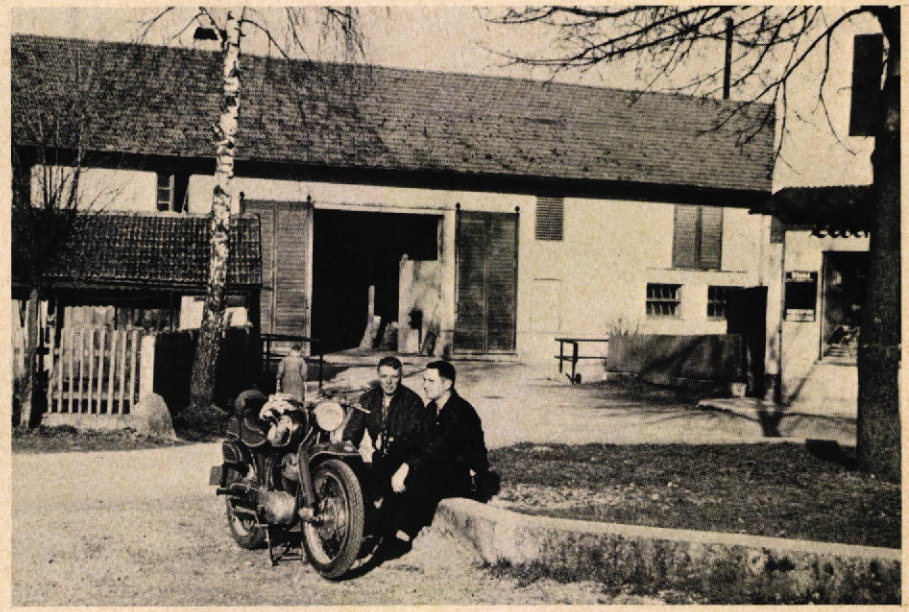
SWEDEN features the luxury of sauna baths, the beauty of its women and some pretty spectacular scenery. The Swedes are pretty hip on camping and facilities are first rate. The small towns feature various shindigs through the summer and are most interesting in themselves. As in England and Ireland, you drive on the left side of the road, but you should be used to this by now. The trip from Goeteborg, on the North Sea coast, to Stockholm, on the Baltic Sea, is a rather hazardous journey, but well worth it. In the Volvo commercials, they state that Sverige, as the natives call it, contains 70,000 miles of poor roads. Frankly, this is a gross understatement, or at least you'll think so after traveling from Stockholm down to Malmo; however, the journey is a pleasant one and since English is a second language you shouldn't have difficulties. If time is short or courage is lacking, you can take a boat from Stockholm to Copenhagen, Denmark for a reasonable price. Naturally, it's much cheaper to float across from Malmo. By the way, the Swedes have a saying to the effect that if you don't like the weather, stick around five minutes. So be prepared for some pretty radical weather, even in the summer. Oh yes, go light on the Smorgasbord.

DENMARK, to my way of thinking, is the most charming chunk of Scandinavia. Once out of Copenhagen, you'll find the Danes to be quite friendly and well up on English. Not that they're hostile and lacking in English in Copenhagen, but it is a major tourist attraction and a big city as well. Hence, personal contacts are likely to be sparse and brief. Wandering over (on the right side of the road) to Jutland, the major chunk of Denmark, will involve some sea travel and island hopping, but it's well worth the time and effort if you intend to absorb the country. The roads will make you appreciate a motorcycle, but watch out when they're wet.

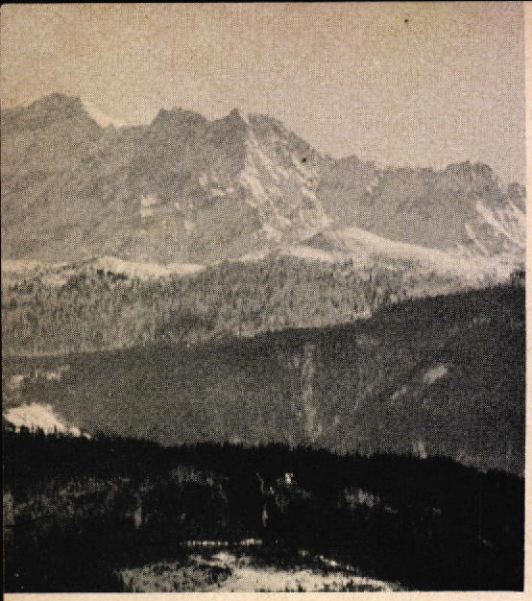
GERMANY is good up north around Hamburg, but it gets better as you travel south. You'll notice the roads are improved, but the drivers aren't and nothing is worse than a German motorist except perhaps a German truck driver. Take in the castles on the Rhine and be sure to eyeball the cathedral at Cologne; then head off down the Autobahn toward Bavaria, pausing first in Heidelberg, Stuttgart, and the Black Forest. The Germans are jealous of their forests and keep them manicured. Hence, a walk in the Black Forest is like nothing else you can imagine; or can you imagine trees with the lowest branches about eight feet off the ground. Anyhow, on to Bavaria and the Alps. You can go through Munich or you can go around it. If you happen by in the latter part of September, go directly to Munich and the Oktoberfest. This legendary festival commemorates the marriage of King Ludwig (by now you've seen several of his son's castles) to Maria Theresa and is in fact nothing more than the world's greatest county fair. During the summer and fall, there are Volksfests and Bierfests, as each town seems to have one or two. The staple diet during the Octoberfest and Volksfests is beer; like France with her wines, Germany, especially Bavaria, has a beer for every occasion. There are three basic types; Pils, Helles and Dunkle. The latter is a dark, rich beer with an average alcoholic content of 16 percent making it roughly three times as potent as the American stuff and a lot more palatable. My favorite is mountain climber's beer which is half dunkle and half lemonade . . . a real thirst quencher. Should you decide to try some climbing, head for Garmisch. You can stay overnight at the monastery at Ettal and visit one of Ludwig's castles (or all of them) at Linderhof, Hohenschwangau or the fairy tale castle at Neuschwanstein. At last count, there were over 120 castles within a 75 mile radius of Munich and since the castle building boom is over, there are still more than 120 castles. Those built by King Ludwig are the most lavish and well maintained. This area, like the rest of Germany abounds with camping sites. If you want a top-notch tent, visit Sport

Would you believe . . . excursion boat? Well, if the party is small enough . . .

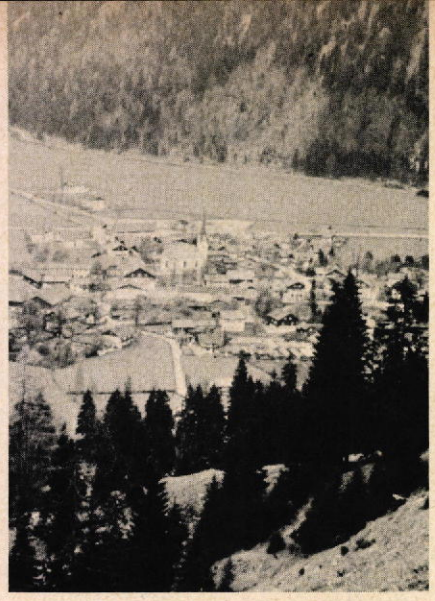
Believe it or not, the Author and friend are sitting in the town square.



This is the Kufstein castle in Austria. Actually more of a fortress.



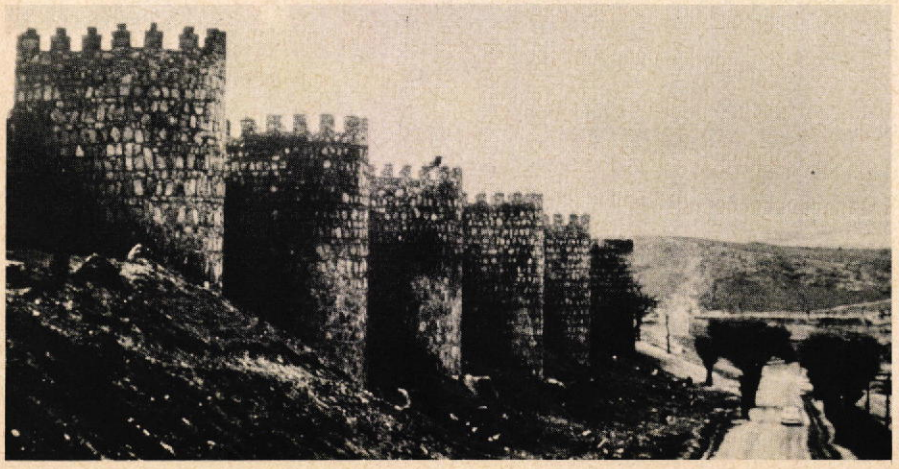
This shot was taken during the winter, but the Austrian Alps are always capped with snow.



If you find a flat spot in the Alps, chances are there will be a nice little town on it.

Even the side of Bavarian buildings are just loaded with old world charm.

Spain is loaded with castles, fortresses and monasteries. This example is at Avila, Spain.



Enzinger in Munchen (Munich); they also have a rental plan.

AUSTRIA is right at the tail end of West Germany and combines much of the Bavarian charm with its own. Virtually every town is interesting in its own right and, weather permitting, the Grossglockner provides the best location for viewing the Alps. If you're a vulture for culture, Salzburg, Vienna and Innsbruck are loaded. Salzburg boasts a music festival, nine churches in five square blocks, quaint shops and plenty of museums. Vienna and its woods are justly famous, as is the Schoenbrun palace. They are forever waltzing in Vienna because of some fella named, Johann Strauss and chances are you'll find some kind of waltz festival in full swing. Innsbruck is nestled right smack in the Alps and hiking is the local sport. Like Salzburg and Vienna, Innsbruck boasts a high rate of culture. Just about the best of the hidden paradise places, Kitzbuhel, has been discovered by the ski nuts, but summer is still a great tourist drought, thankfully. Kufstein is another of the places overlooked by tourists and should be included on your route.

SWITZERLAND is a collection of steep hills surrounded by steeper mountains. The result is a complete absence of straight level roads and beware of the damp cobblestones. Every September, the entire Swiss Army takes to the road and every available room, matter of fact, every available inch of flat land is used to house the troops. Switzerland is a multi-lingual country with a very high standard of living. This simply means that your dollar or franc won't go quite as far in Switzerland as it will in Italy, Spain, France, Austria or Germany and likely as not, someone familiar with the American language will be around if you need help. All of the major cities have excellent camping facilities virtually in the heart of town. By all means include a visit to Altdorf on your itinerary and watch the classic reenactment of the story of William Tell.

ITALY is a paradox: gaudy, plain; clean, dirty; archaic, modern and it all depends on where you travel. The northern part is probably more tolerable from a standpoint of cleanliness,

but there are exceptions. Southern Italy is less tolerable from the same standpoint and again, there are exceptions. You'll just have to take Italy for what it is: a country of friendly pedestrians and hostile motorists. You'll probably get a very shocked look the first time you order spaghetti. Hopefully, someone that is conversant in English will explain that spaghetti is merely a side dish or appetizer, not a meal in itself. For the most part, Italian food is a wonderful adventure; even more so if enjoyed in an Italian home. One word of advice; don't talk politics, yours or theirs. Camping is excellent and don't be afraid to visit the local grocery stores. Contrary to popular belief, the best Italian wines stay in Italy. If you're searching for an interesting path, try the road from Trento to Brescia, along the Lake of Garda with a stop over at Riva. Naturally, you'll want to visit La Bella Roma and Naples, but do stop and look at the ruins of Pompei, just outside of Napoli. Head inland toward what's left of Florence then cut over toward Pisa. In the north of Italy, you'll discover Milan. Spend a little time here and camp at the Royal Park adjacent to the famous Monza Autodrome. Tour guides will describe all the interesting wonders of Milan, but no one has written a guide on how to slice through the incredibly dense traffic. Southwest of Milan is Turin (Torino), a very interesting place, but taking the Autostrada (Freeway) to Genoa will bring you to the Italian Riviera, thence to the west will bring you face to face with the world's biggest tourist trap. However, don't take my word for it, sample it in person.

The border crossings will become a commonplace sight. This one is at Strasbourg, France.

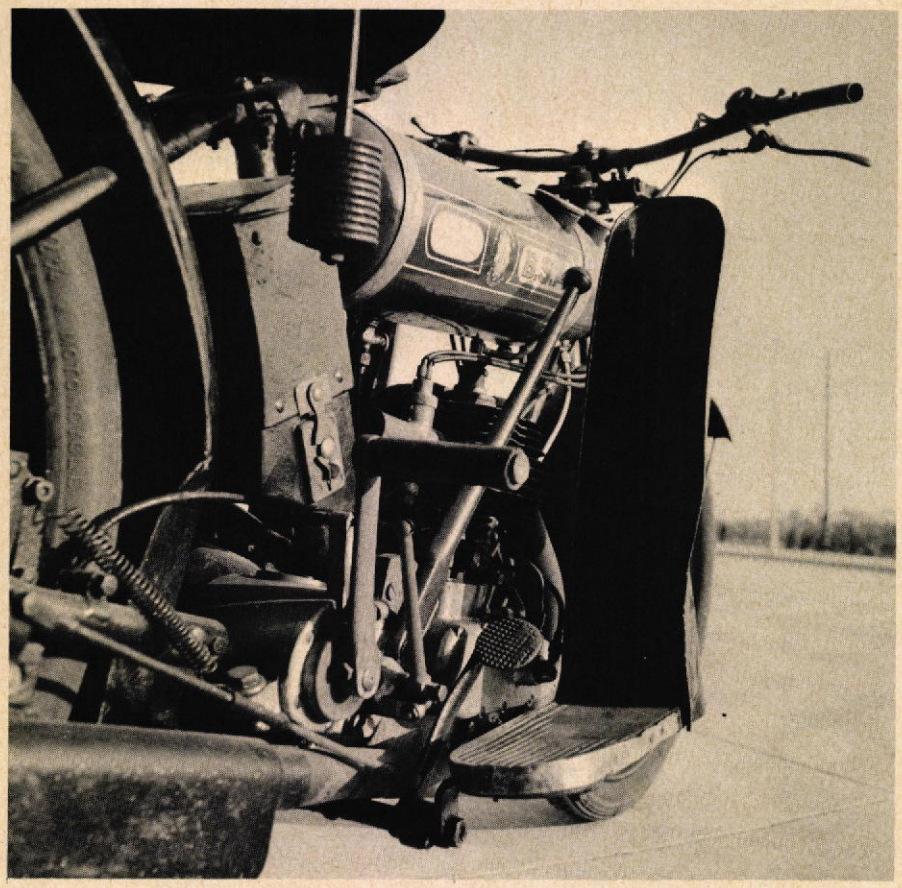
The town of Riva on the Lake of Garda. It's September, but the Dolomites are still covered with snow.

SPAIN if taken as a whole, is probably the least expensive country in Europe. For the culture vultures, there's Barcelona and Madrid; the antiquity lover will enjoy the rest of the country. More castles, fortresses and monasteries than in the rest of Western Europe combined. Most of the roads are in pretty good shape, but can't be considered freeways by any stretch of the imagination. Camping sites, like service stations are few, but the Government run Posadas are nice if not lavish. By all means, sample the local food, wines and liqueurs. If you head up to Pamplona at the proper time of the year you'll enjoy one of the local games made famous by Ernest Hemmingway's book, "The Sun Also Rises." My advice it to stick around and spectate, but avoid participation. The area around Pamplona is very similar to Southern California and may account for the migration. Remember that bit about, "The rain in Spain falls mainly on the plain." Well, all I can say is that a lot of it slops over into the high country too.

FRANCE has been praised in books, stories and songs. There is a great variety of everything in France, be it cooking, drinking, sights or what have you. My favorite areas are the Bordeaux region, the Moselle and Sarthe areas and Paris of course. Naturally, the closer you get to Paris, the more expensive everything becomes. Paris, proper, is the pinnacle of extortion. To keep from being bankrupted, buy the Guide Michelin and use it, but take the time to add the total on every bill. I've heard it said that France derives half its gross national income from overcharging. Whilst in Paris, find a garage and park your machine. Nowhere, will you find better or less expensive public transportation than in Paris. I probably won't be around when you sample your first French pastry and find a piece of raw meat, but maybe it's just as well. Hopefully, you'll fare better with the Paris traffic, but the advice concerning the garage should circumvent this problem. Le Champs Elysee and its 16 lanes of rush hour traffic is no joke.

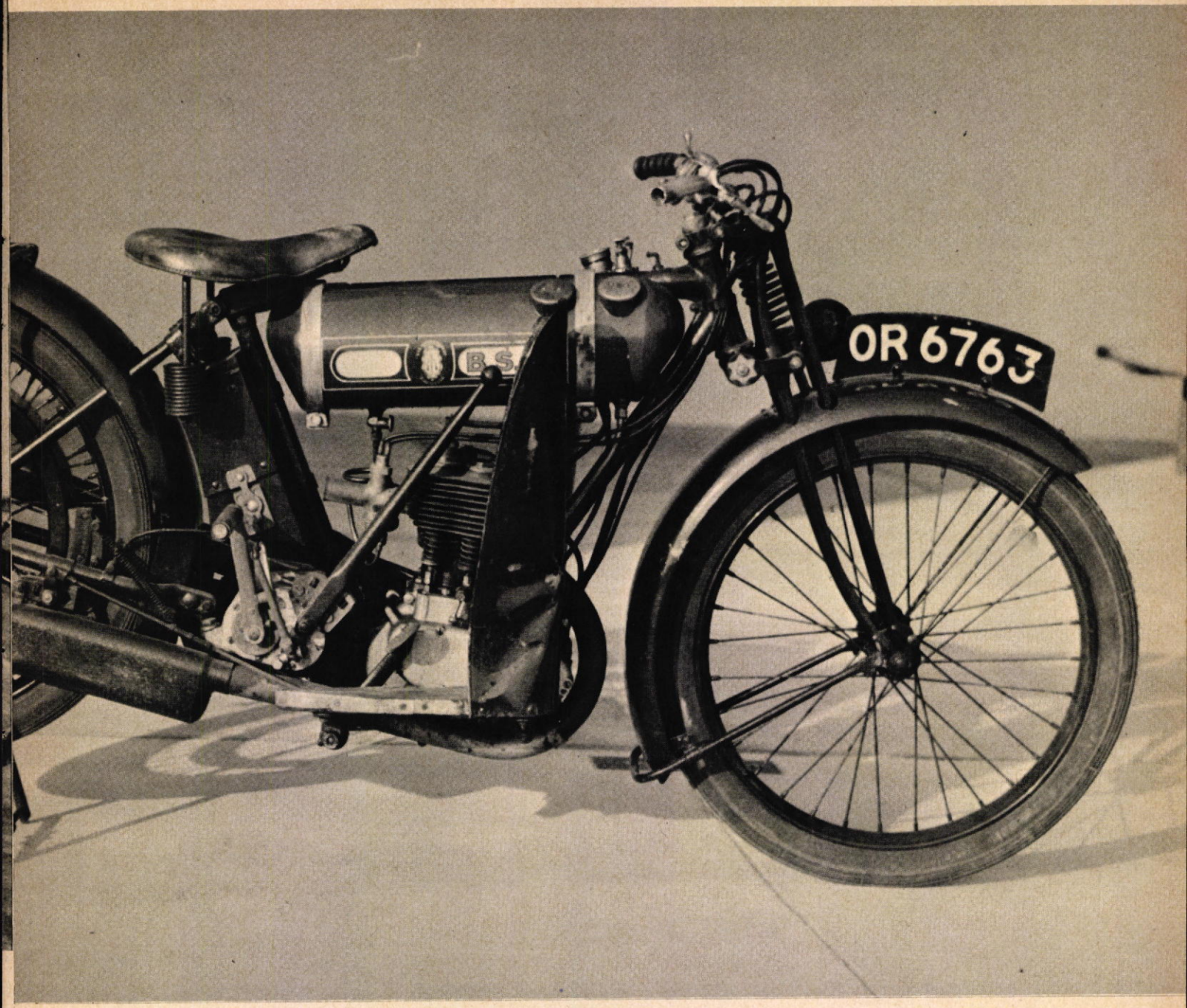
NETHERLANDS or Holland as it is more commonly known is a great place for the motorcycle tourist. During the Tulip Festival in the spring, the countryside is a riot of brilliant color. Every city and town in Holland is immaculate. I never found an ex-

Continued on page 79



1919 BSA

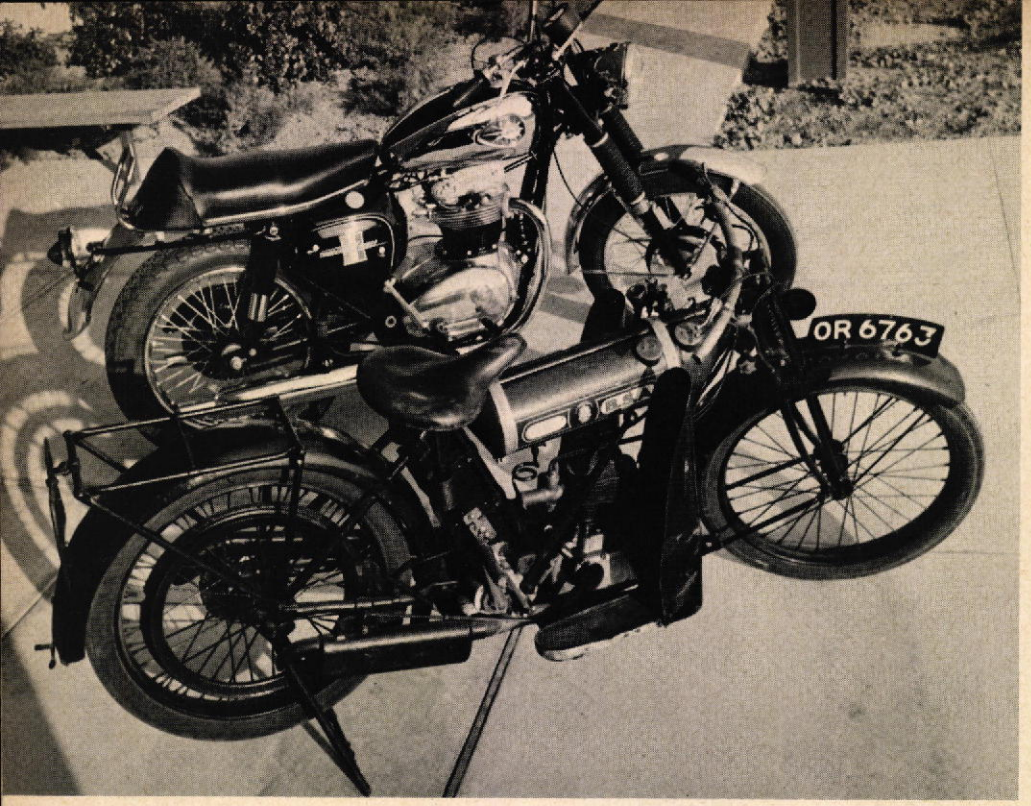
by Dave Gooley

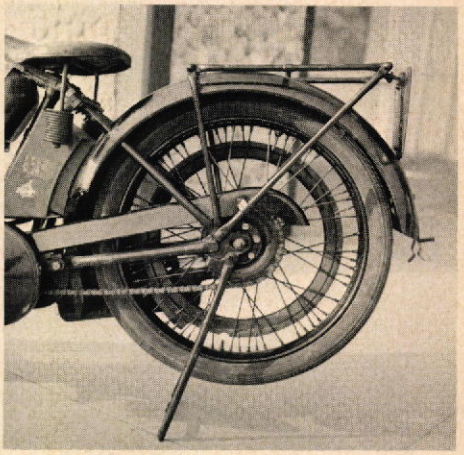


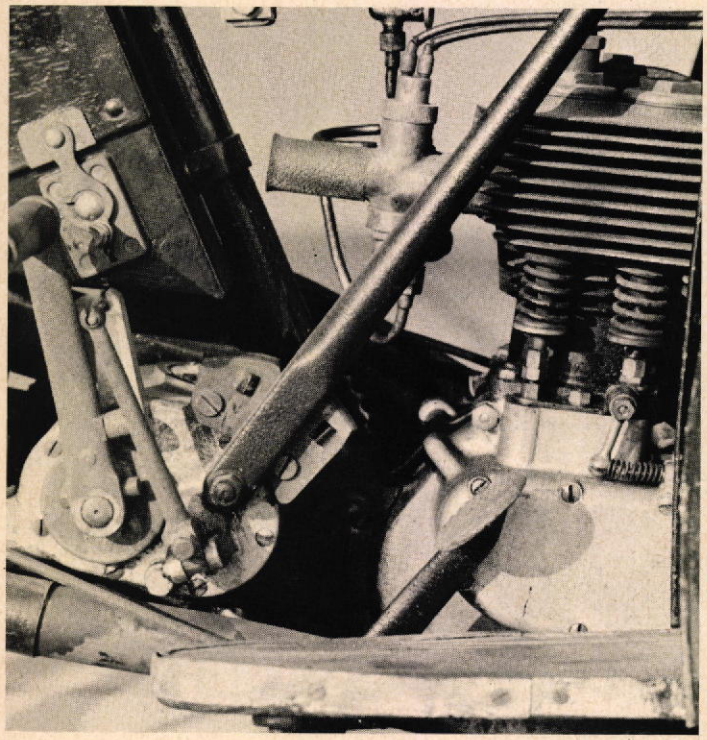
Restoration is a word everybody knows; however, few people understand just how much work it means when the object to be restored is a motorcycle. Bob Ewing found out when he asked Bud Ekins to bring back from Europe a machine for him to play with. Bud showed up with this 1919 BSA, dumped it into Bob's lap and said, "have a ball." After many months of hard work Bob came up with this sterling example of a job well done.

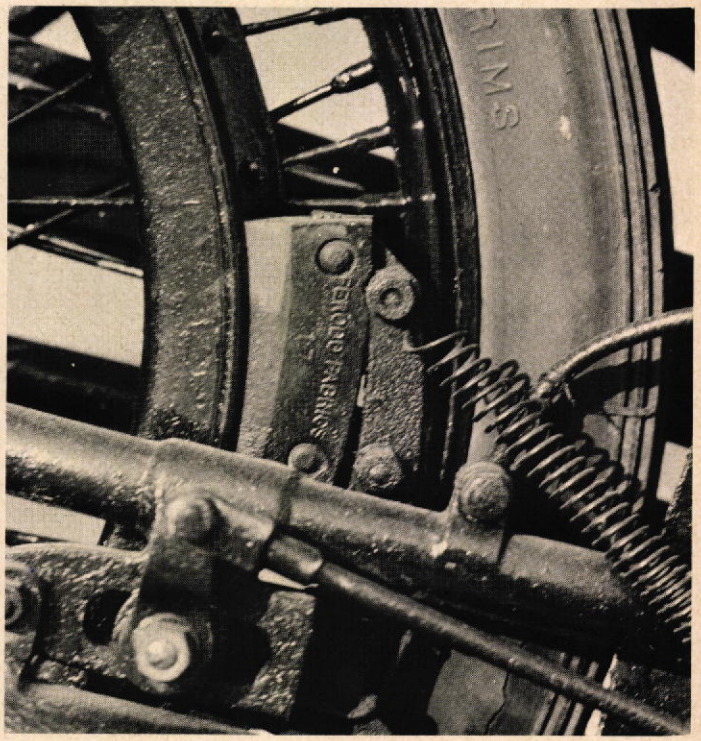
After completely restoring the bike Bob found out some of its more interesting points. The oil has to be pumped to the engine by hand. It is measured through a sight glass mounted on the side of the gas tank. The faster you go the more you have to pump. The transmission is a two-speed unit operated by means of a hand lever. This machine abounds with levers of one sort or another, besides the shifting mechanism the throttle is also governed by a lever instead of a twist grip. The bike has brakes only on the rear wheel. It is operated by both a foot pedal and a hand lever.

The engine size is 250 cc producing seven horsepower. Interestingly enough, the push rods run up the side of the cylinder on the outside. This way there is no doubt whether the cam fol-





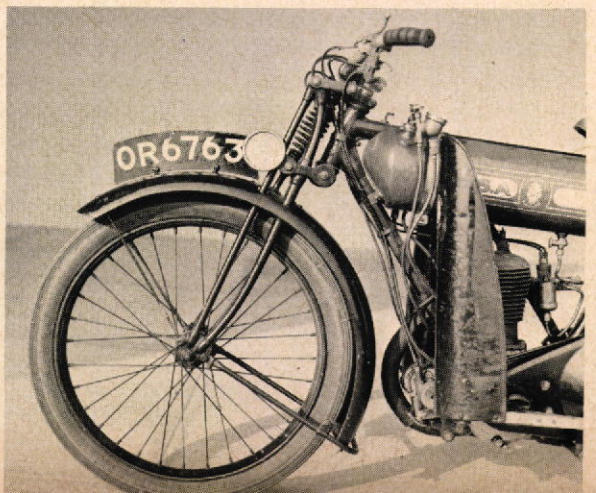




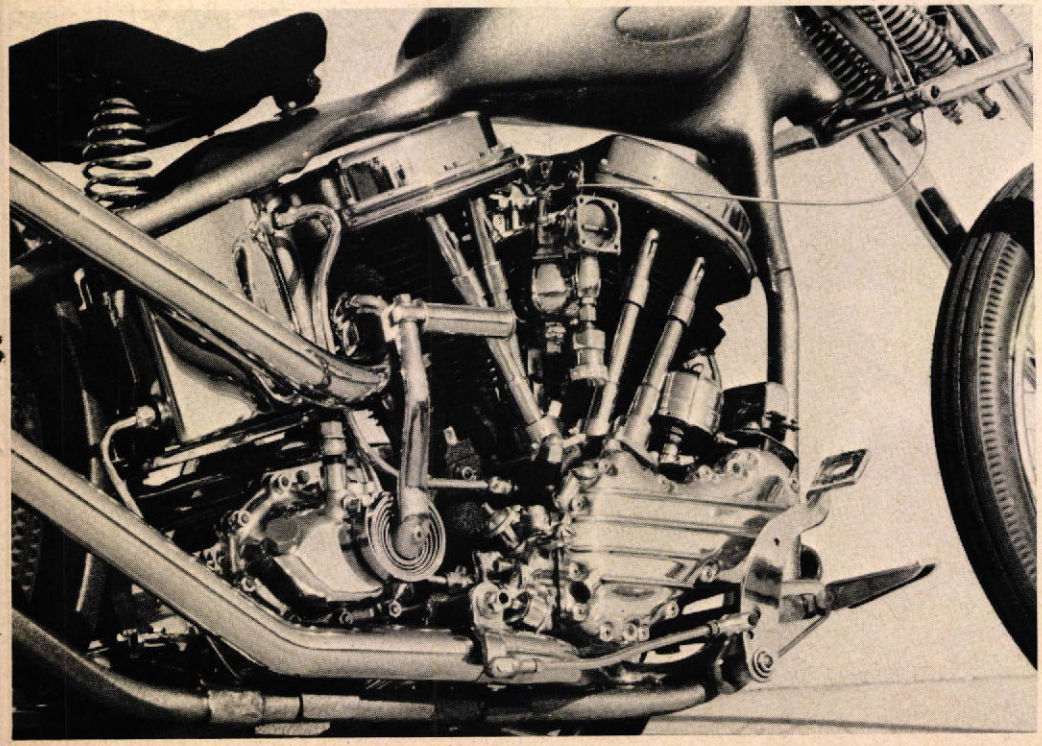
lowers are working.

At this moment this bike is sitting in the showroom of BSA Western. On display with it are the English registration papers showing when it was last ridden on the street—1938.

If you ever want to restore a machine, take a tip from Bob, "It is a lot of work, but when you see the finished product it's sure worth it." We think so too.



CHOPPED CHARLEY

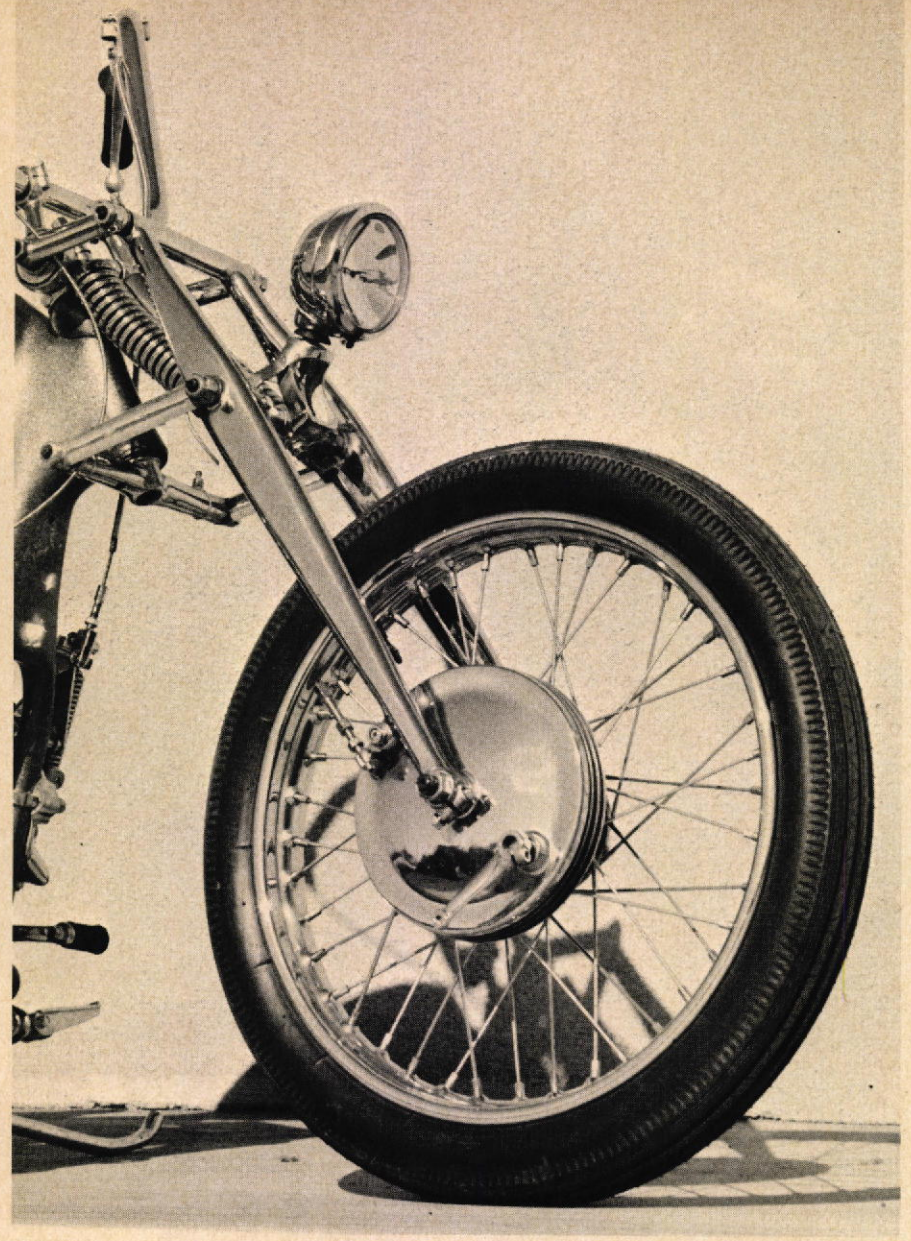


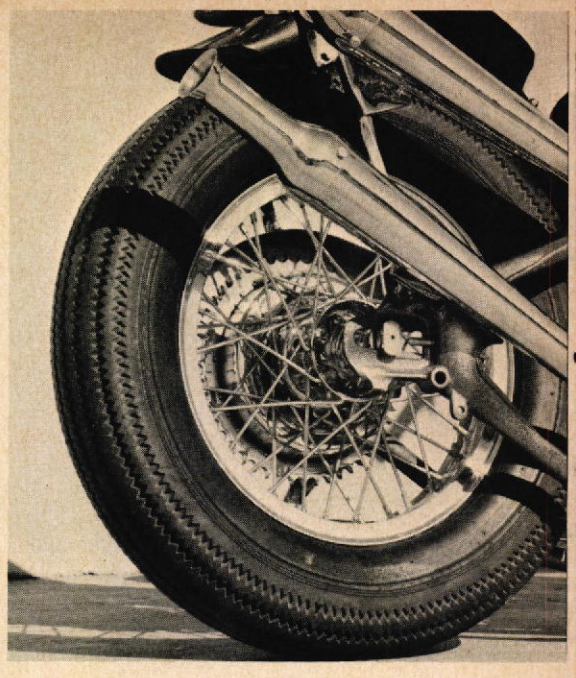
by Tom McMullen

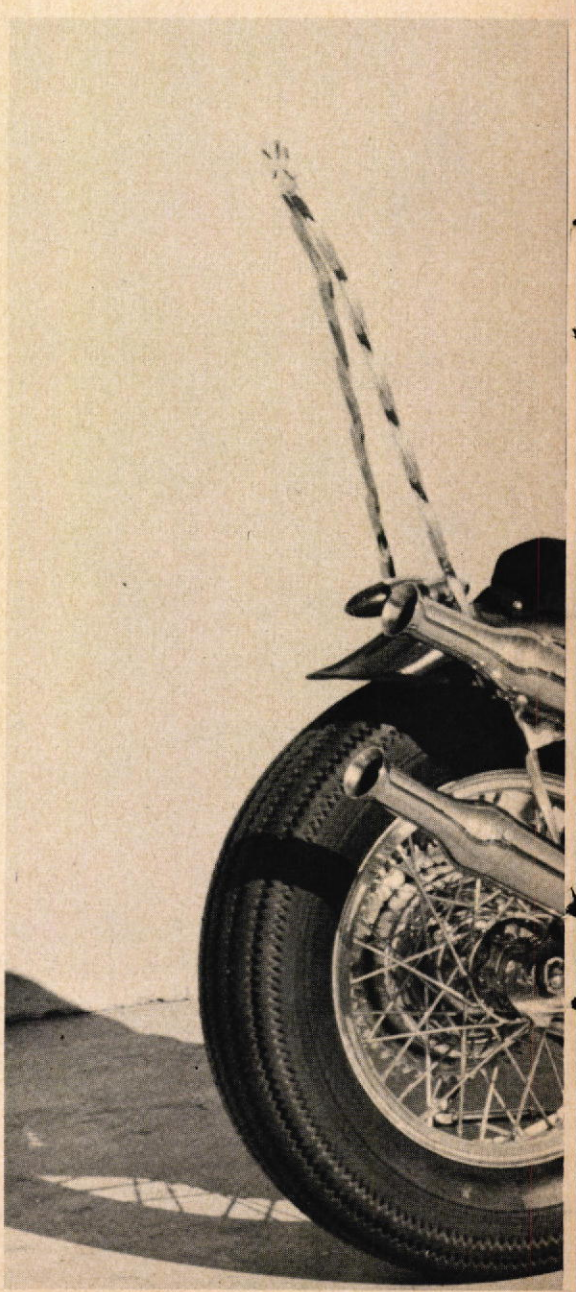
From little things to big things grow, or so they say. In Farrell Jeppesen's case, this seems to have held true. Way back when Farrell was 13 years old, he was treated to a ride on a Harley motorcycle by his neighbor. Well, from that first ride on, he's been an enthusiastic bike fan. Now residing in Bellflower, California, Farrell is the owner of FarMar's Motorcycles, also located in Bellflower.

To keep his customers tuned in on the latest in custom ideas for bikes, he has his own show bike as a demonstrator. Farrell started out with the stock 1950 Harley frame, but from there on in, it was strictly a product of his wild imagination. Farrell cut a two inch section from the front frame to obtain a raked out front wheel.

His next project was molding the gas tank to the frame. Many hours of







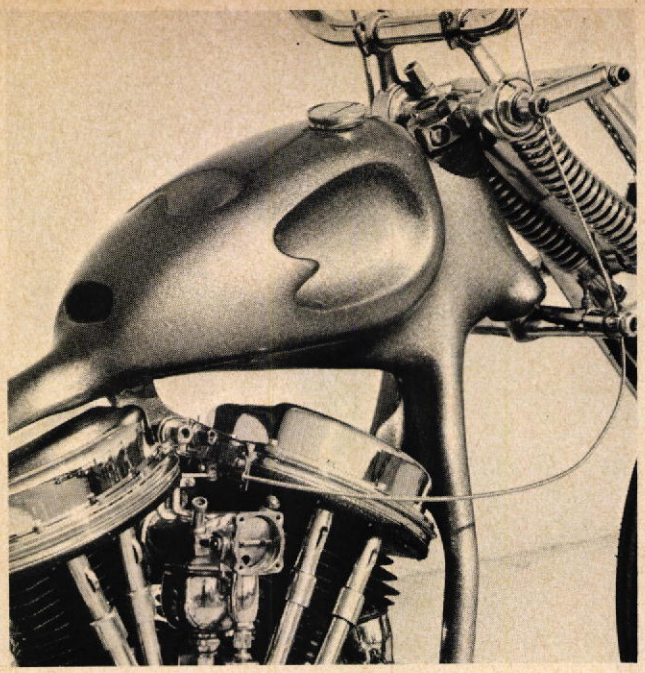
glassing, forming, and sanding went into the intricate scoops and indentations of the final gas tank. At the extreme rear of the frame, Farrell did more of his fantastic glass work by adding molded scoops. The entire frame was detailed with molding for a smooth and finished appearance.

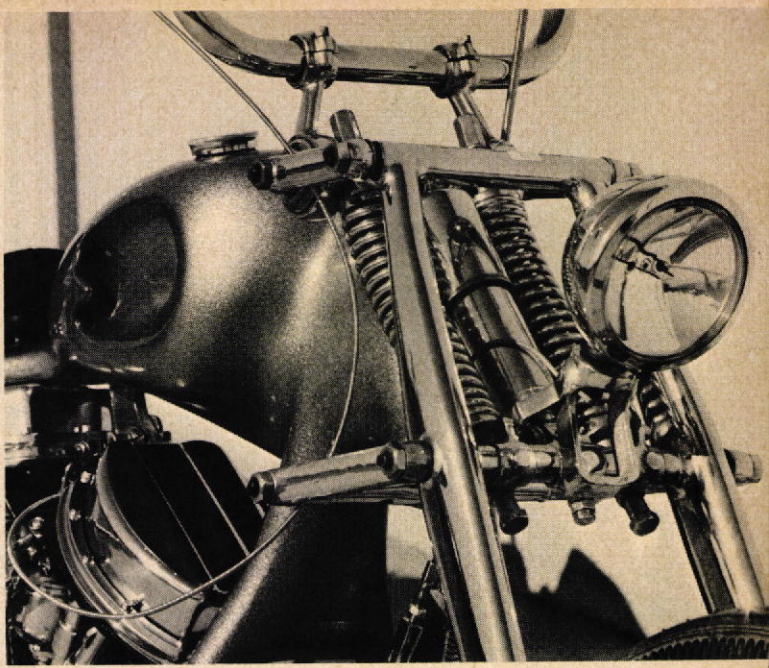
Using an old Indian front end, Farrell did some filing, brassing, and machining to achieve the final installation. Farrell says that there are plenty of other small items done to the bike which old time Harley riders can spot and appreciate.

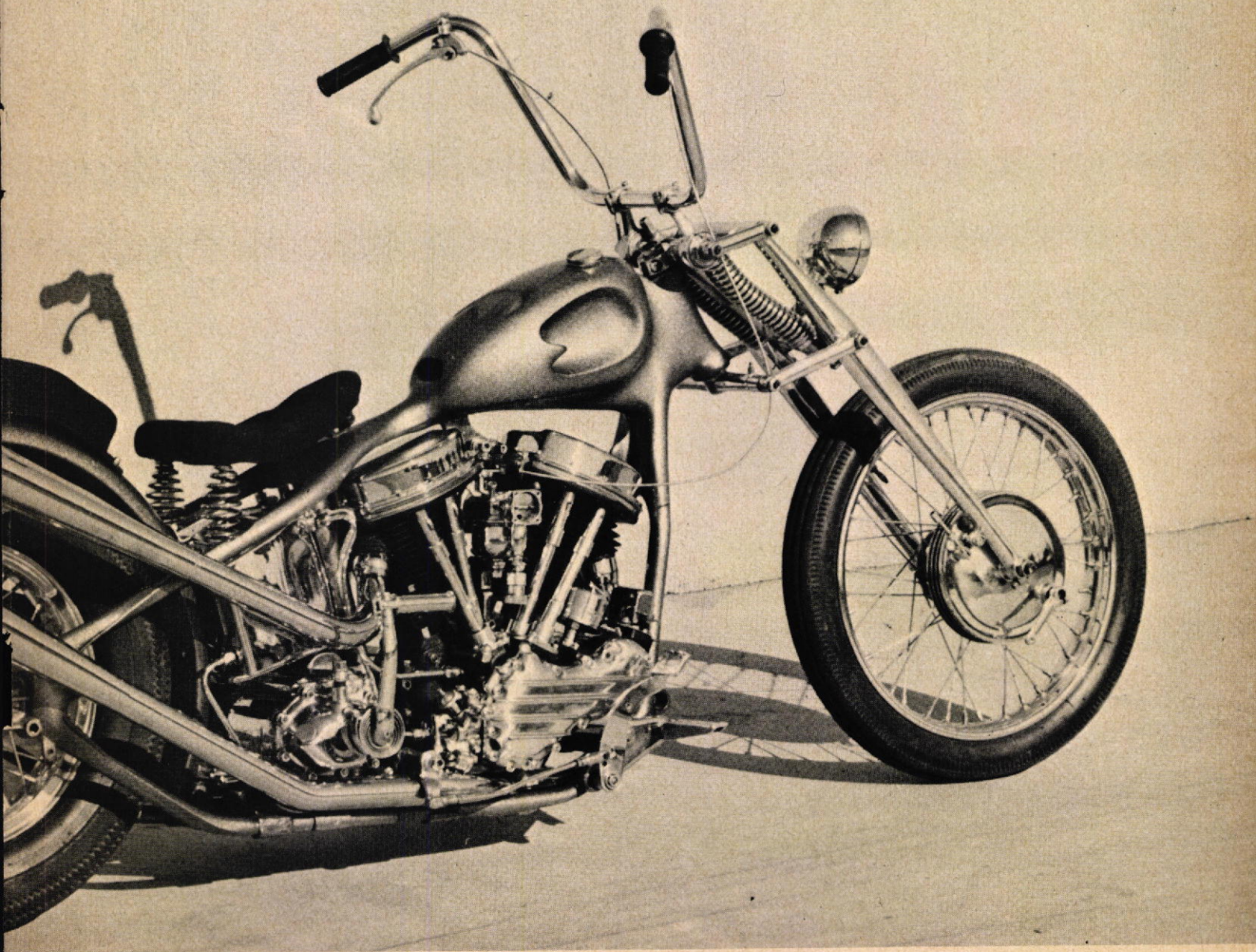
For power, Farrell modified his 1950 Harley engine. Extensive polishing and balancing of the crank and rods improves performance. Farrell even polished the cases to relieve drag. The engine components are all basic Harley, but reworked to improve the wear and performance factors.

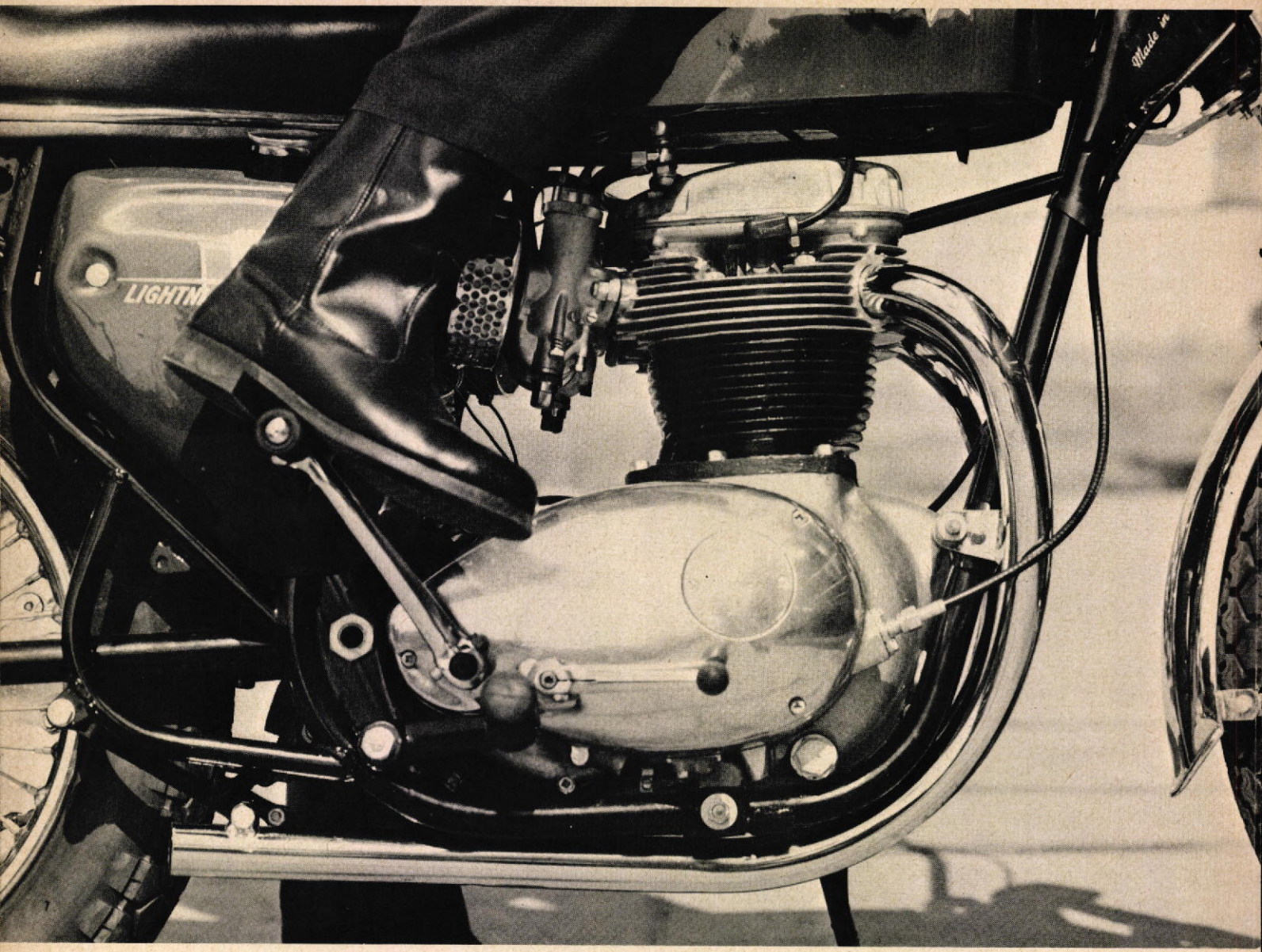
While in the process of painting the bike, Farrell had most of the parts sent to A&A Chrome Plating. Then he and Joker, owner of Graham's Custom Paint located in Fullerton, California put their heads together to dream up some type of fantastic finish. Joker is one of the real artists with a paint gun, and he applied a matchless paint job using purple red metalflake, candy and pearl as a base, with a mixture of lavender blue and silver green candy sprayed on top of the purple. Black velvet was used to upholster the seat.

Farrell has put a lot of time and expense into his bike, and customers find it easier to visualize what they want from observing it. How's that for customer service?









WHEN IT WON'T START...

...stop kicking and attack it step by step

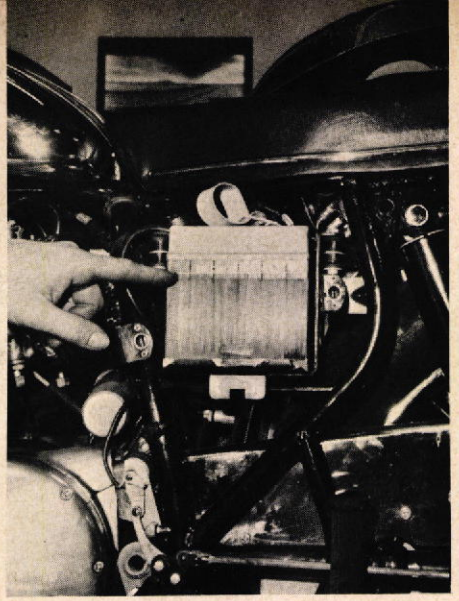
by Mike Capalite

DUE TO THE different characteristics between Battery and Magneto Ignition systems, we have decided to treat them separately. Part two on Magneto Models will appear in next month's issue.

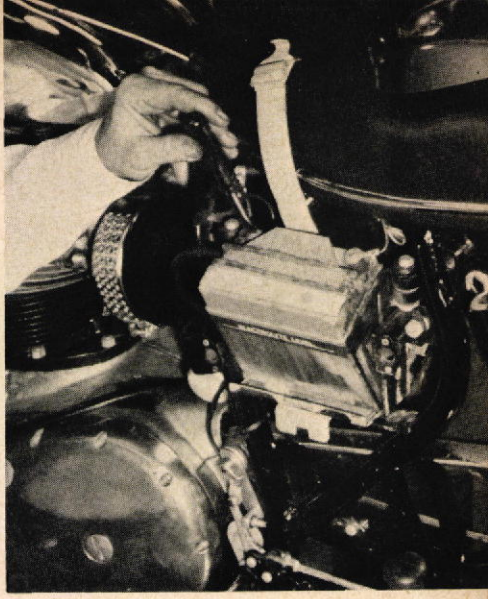
According to the basic theory behind the internal combustion engine, only three things are necessary to make an engine operate, fuel, compression, and ignition. If a proper fuel-air mixture is compressed enough and an ignition spark occurs at the correct time, there is absolutely no reason that it will not run. Of course, telling this to a rider who has just finished a half hour of depressing the kickstarter vigorously on his trusty mount in an attempt to build a fire in it is not too wise as you may find your facila characteristics suddenly subject to irreparable damage. Instead, we offer up these few suggestions that the rider might check out himself before giving up in desperation and proceeding to the nearest repair shop.

The initial check albeit the simplest is to make sure you have petrol. One of the chief characteristics of all motorcycles manufactured in and imported to the United States is that they refuse to operate without some kind of combustible fuel supply. Once it has been determined that there is ample gasoline, the following checks may be made and 9 times out of 10 the trouble will be diagnosed.

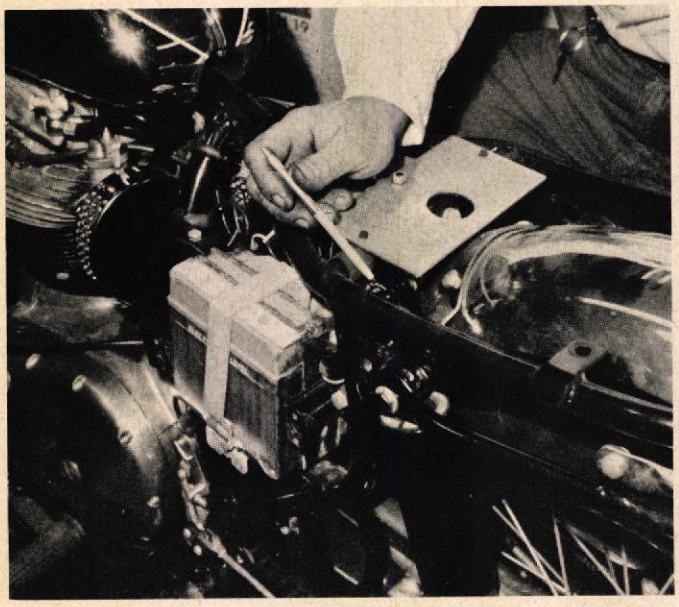
1



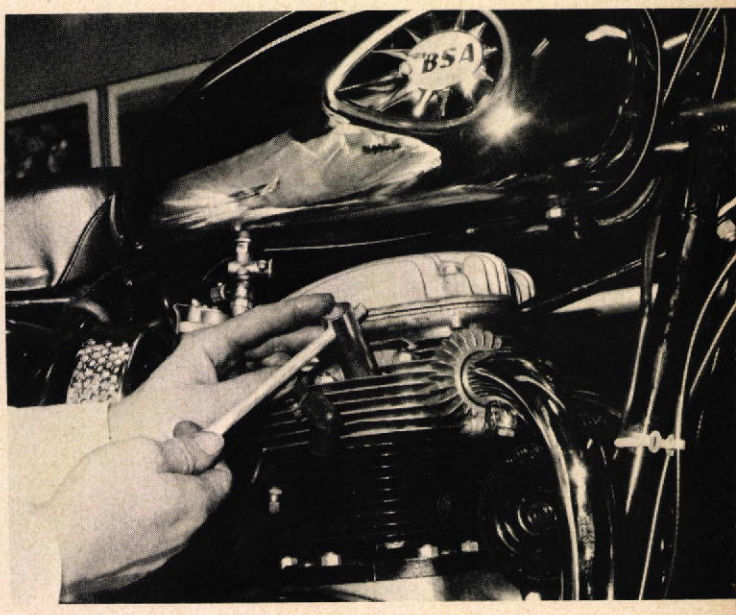
2



3



4



5

1 CHECK FOR BATTERY VOLTAGE

First test should be for battery status, this may be done simply by seeing if the horn will honk or by turning on the lights. A weak horn or dim lights or no horn or lights will lead you first to the battery or to the fuse.

2 SEE IF BATTERY NEEDS REPLACEMENT

New plastic batteries allow the rider to visually check the internals of the battery for signs of damage or broken plates or sulphating and shorting our of the plates. Remember that electrolite level should never be allowed to drop below the top of the plates. Once battery has been orginally filled with electrolite it should only be topped up with pure distilled water.

3 CHECK BATTERY CONNECTIONS

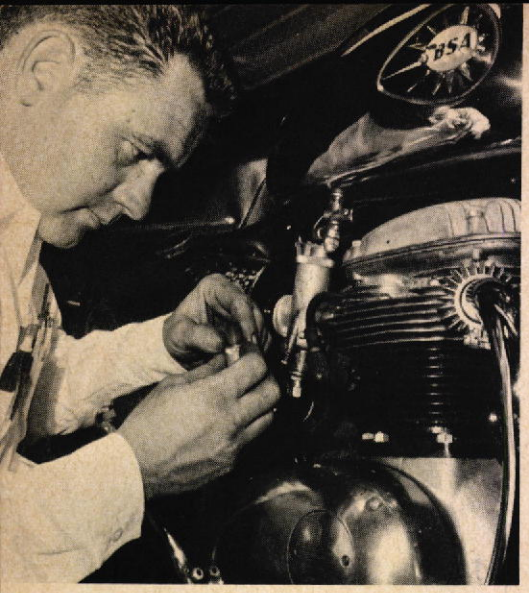
Loose or corroded battery connections should be cleaned, tightened and then smeared with petroleum jelly; not grease. Bad connections at the battery may cause damage to the electrical system as well as making it difficult to start.

4 CHECK FOR DAMAGED RECTIFIER

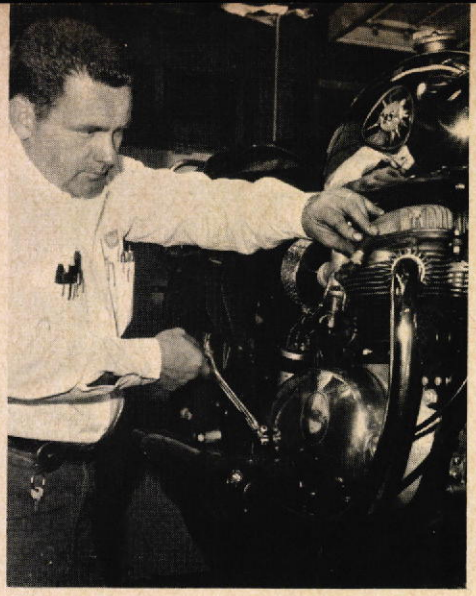
If battery appears to have no voltage for no apparant reason, check rectifier for damage. Rectifiers are easily damaged by heat, moisture, and ham-fisted home mechanics. A damaged rectifier can bleed the juice away to ground or worse, let it flow back through the coils of the stator and de-magnatize the rotor.

5 REMOVE THE SPARK PLUGS

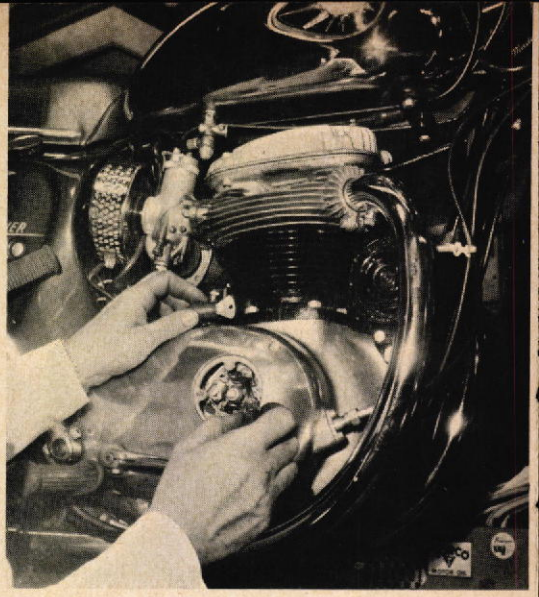
When removing spark plugs with box wrench and tommy-bar supplied with tool kit, caution must be used to avoid damage to plugs as the wrench will have a tendency to slip sideways and break the porcelain part of the plug.



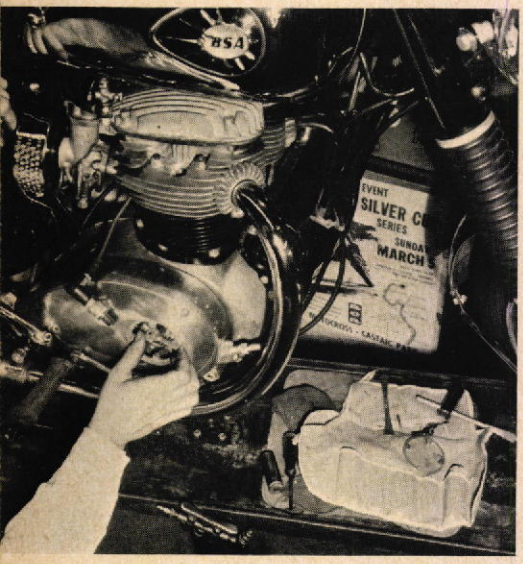
6



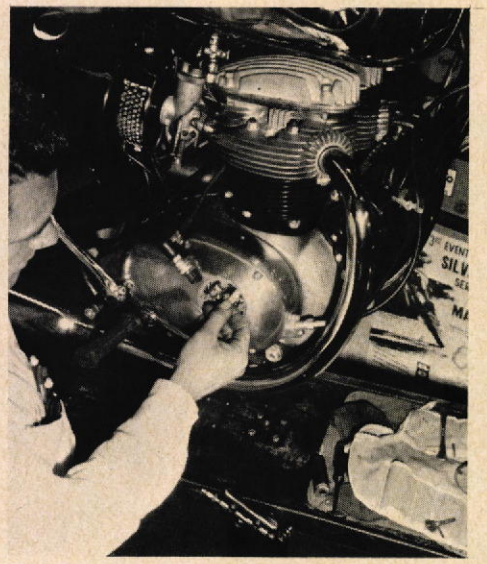
7



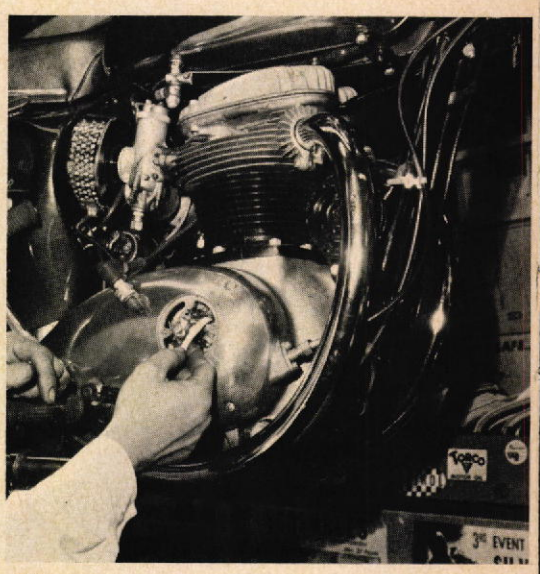
8



9



10



11

6 INSPECT PLUGS

When inspecting spark plugs, look for wetness not only as a sign of a possible fouled plug but as an indication of the presences of fuel in the cylinders. Wetness of the plug could also indicate a forgotten choke left closed or a flooding carburetor. If a plug looks dry and blistered when it had always looked good before, suspect fuel starvation as well as possible ignition timing problems.

7 CHECKING FOR SPARK

By connecting high tension lead to plug and grounding plug to head, kickstarter is depressed with ignition on as a test for spark. If a spark jumps the electrodes, this does not necessarily mean that it will do so under compression, by the same token if no spark is seen, it does not mean that the spark is not reaching the plug as it may be shorting internally.

8 ANOTHER MEANS OF SPARK CHECK

This check may also be done by manually opening and closing the contacts or shorting across them with a screwdriver when they are on the high lobe of the cam. On twin cylinder machines, both plugs should be removed and inspected before checking for spark.

9 BY-PASSING A BAD PLUG

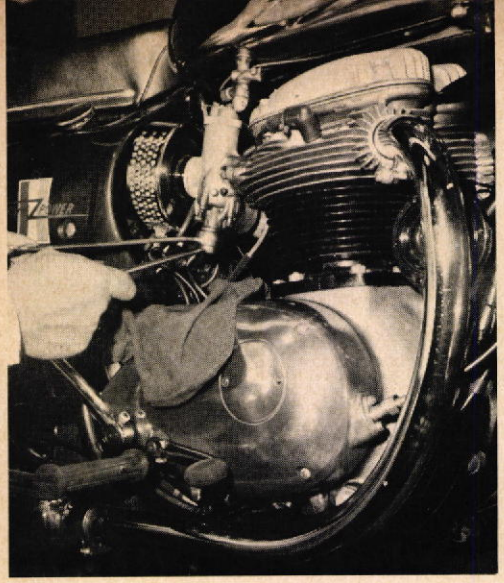
If no spark can be gotten with the spark plug a further check may be made by using a solid object such as the ignition tool instead of the plug and attempting to obtain a spark jump to ground. The strong of heart may even go so far as to grasp the plug in an attempt to feel the spark, but this is not recommended for the rider with a history of coronary problems.

10 DIRTY CONTACTS CAN BE VILLAINS

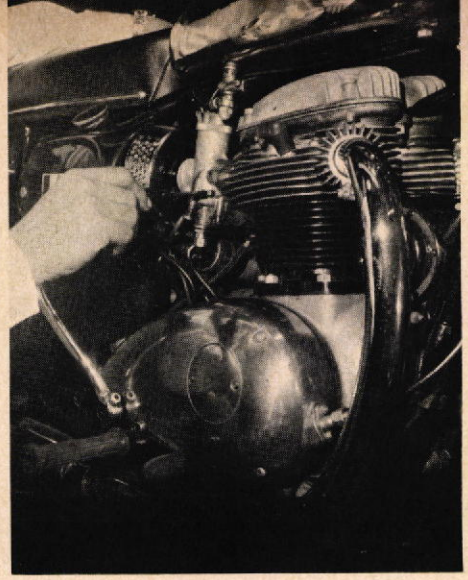
Oil leaking from shaft seal can work its way to contacts and become burned into a hard deposit which may be removed by cleaning with #1000 grit flex-stone before burnishing with a business card.

11 BUSINESS CARD FOR BURNISHING

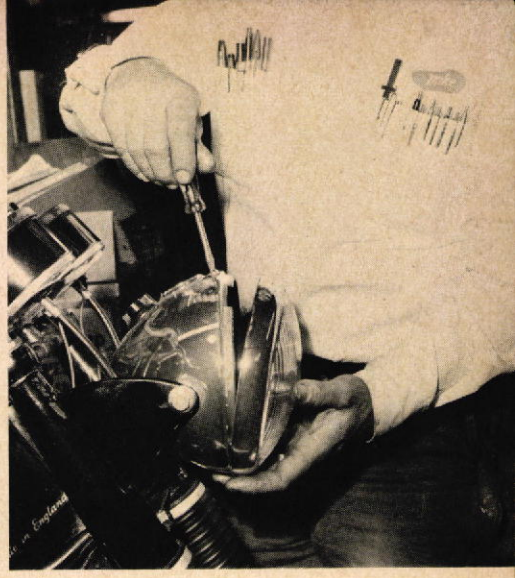
Dirt, grime and oil may be somewhat removed from contacts



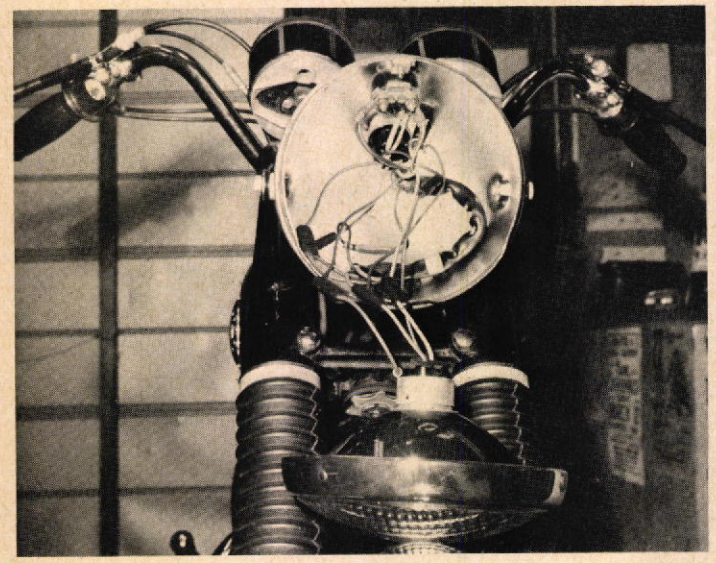
12



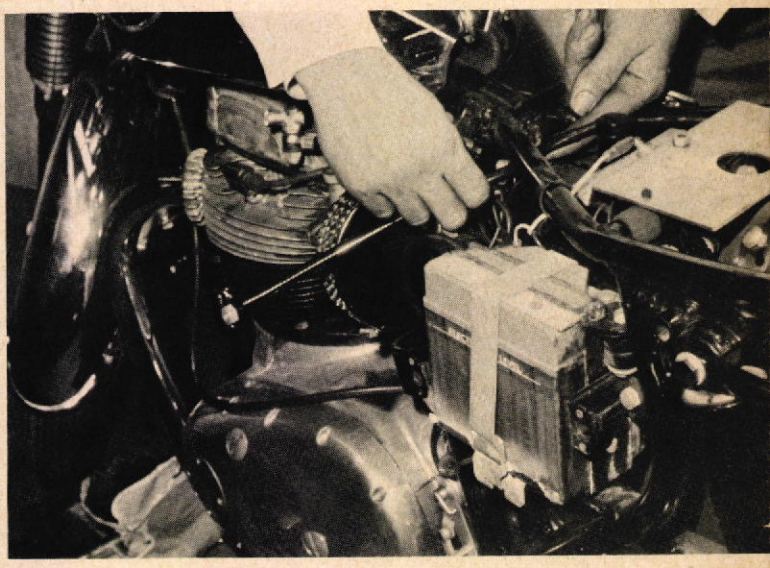
13



14



15



16

by inserting a strip of business card between the contacts and twisting back and forth so card rotates under contacts instead of sliding through them. Points should then be opened before the card is removed as pulling the card out may leave a tuft of paper between the contacts and act as an insulator.

12 FUEL FLOW TO CARBURETORS

When drainging carburetors to check for fuel and for possible moisture or dirt trapped in the jet cover nut; be sure to hold larger nut with wrench. Avoid slacking off on red fiber washer as once slackened off, it should be replaced or it will cause fuel leakage. On Japanese carburetors this is not necessary as complete float bowl is removed. On late model Hondas, float bowl drain screw need only be backed off a few turns as complete removal is not necessary.

13 CHECK CARBURETOR SETTINGS

Comprehensive owner's and riders handbooks will give factory recommended settings for carburetor, these should be closely adhered to unless changed for a specific reason such as muffler removal, air cleaner removal, altitude, etc.

14 LAMP UNIT REMOVAL

Head lamp units which contain ignition switches or ammeters are excellent hiding places for no-start gremlins. Lens should be removed carefully and slowly so that if a loose wire connection is found you can feel safe that it was not knocked loose while removing lens.

15 ELECTRICAL SPAGHETTI

Once inside head lamp assembly carefully check all connections especially those to the ammeter and ignition switch.

16 ALL CONNECTIONS SHOULD BE CHECKED

While coil connections on Oriental Motorcycles are secured with a nut, late model English bikes have a lip-over type connector which if treated badly could possibly give problems of poor electrical connections. No matter what type of connections, all should be checked for good contact.

Yamaha wins 7 out of 10 in 100-mile classic!

DAYTONA BEACH, FLORIDA: There were high winds coming out of the southeast and the temperature was a chilling 48°. Tough racing conditions. A record number of the world's top riders on the fastest machines ever assembled... 150 of them... revved up for the four qualifying heats. Yamaha won all four as 80 riders transferred to the main event. That was just the beginning!

In the 250 cc. finals it was Gary Nixon winning every lap as he streaked to victory. A field day for Yamaha... winning all four of the heat races, setting new track records in both the heat and final, taking seven out of the first ten places in the final and becoming the first to win the event three straight times! In 1965 it was Yamaha 1, 2, 3, 4, 7, 8, 9, 10. In 1966 Yamaha took 1, 2, 3, 4, 6, 8, 9, 10. And this year Yamaha swept 1, 3, 4, 5, 6, 7, 8.

250 cc. Finals

1.	***Gary Nixon***	***Baltimore, Md.***	***Yamaha***
2.	*Dick Hammer*	*Lakewood, Calif.*	*Suzuki*
3.	***Robert Winters***	***Ft. Smith, Ark.***	***Yamaha***
4.	***Dick Newell***	***El Monte, Calif.***	***Yamaha***
5.	***Donald Twigg***	***Hagerstown, Md.***	***Yamaha***
6.	***Frank Camillieri***	***Chelsea, Mass.***	***Yamaha***
7.	***Norman Stovall***	***Lubbock, Texas***	***Yamaha***
8.	***Yvon Duhamel***	***Montreal, Quebec***	***Yamaha***
9.	*Sonny Gager*	*Jacksonville, Fla.*	*Kawasaki*
10.	*Don Butler*	*Woodridge, N.J.*	*Kawasaki*

200-Mile Event—Racing against bikes with more than double the cc., Mike Duff planted his Yamaha 350 in 8th starting position among 97 starters after an amazing 132 MPH time trial effort! Duff finished 19th and teammate Tony Murphy placed 18th in Yamaha's first experimental effort against the "big ones," with the only 350 front runners in the race.

And Yamaha won these events, too!

100 cc. Sportsman Class—It was Joe Bradley of Dallas, Texas on a Yamaha 100 Twin.

125 cc. Sportsman Class—Yamaha again! Bobby Sandidge of Houston, Texas on a Yamaha YA-6.

250 cc. 78-Mile Novice Race—Kenny Stephens of Sarasota, Florida on a Yamaha 250.

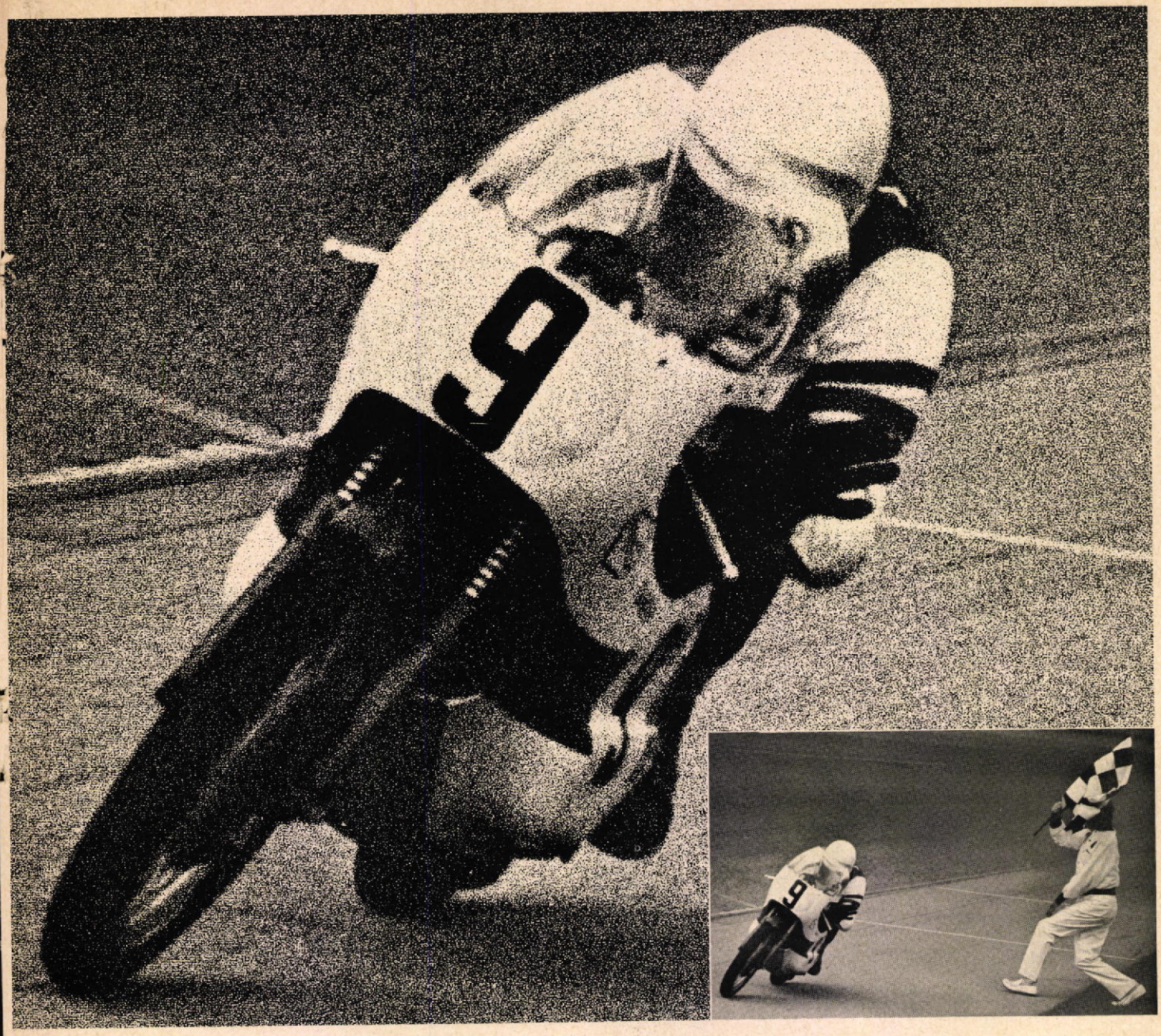
Gary Nixon blazes across finish with record-shattering 94.09 mph.

Yamaha sweeps Dayt

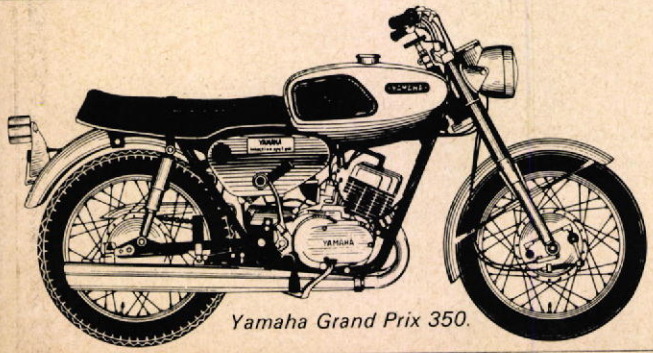
Start something new—Yamaha! Race-bred from Champions. The newest, most complete line in sportcycling with 17 great 1967 models. All with proven oil injection; big, waterproof, dust-proof brakes and Yamaha's safety-engineered concept. Line 'em up... start 'em up... wind 'em up now at your Yamaha Dealer's.

Yamaha Grand Prix 350—the new top of the line that gives ultra high performance... takes on anything with great handling ...effortless, reliable starting every time. Cruises at 80. Speed range 100-110. Standing ¼ mile 14.0 sec. Deep, lustrous chrome fenders. 5-speed box. BHP 35/7500.

See all 17 models—from the 350 to the 50. There's a model for every kind of riding... on the street, highway, trail or track. *Go Yamaha and go with the winner!*



ona 3rd. straight year!



Yamaha Grand Prix 350.

YAMAHA

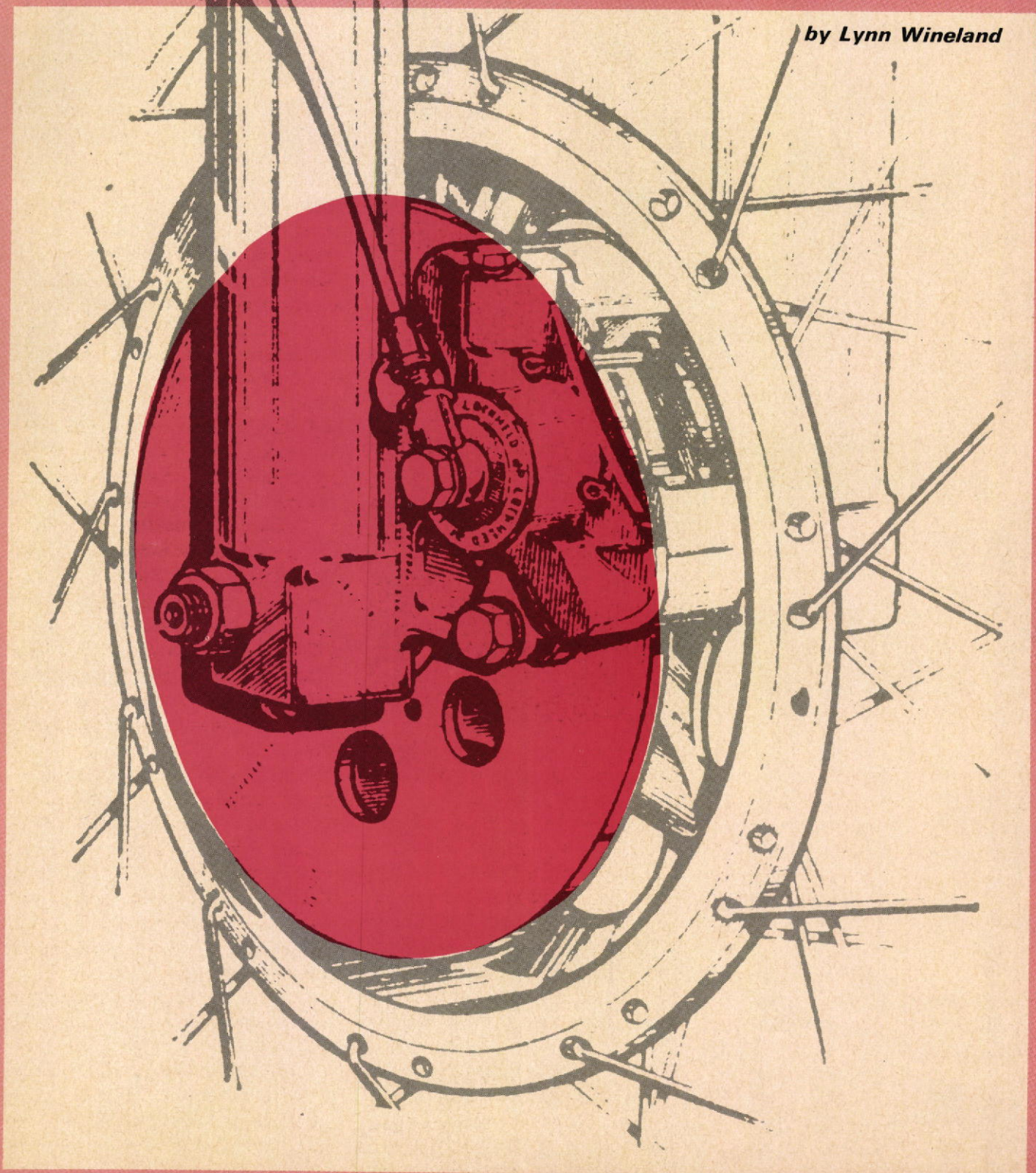
INTERNATIONAL CORPORATION SINCE 1887

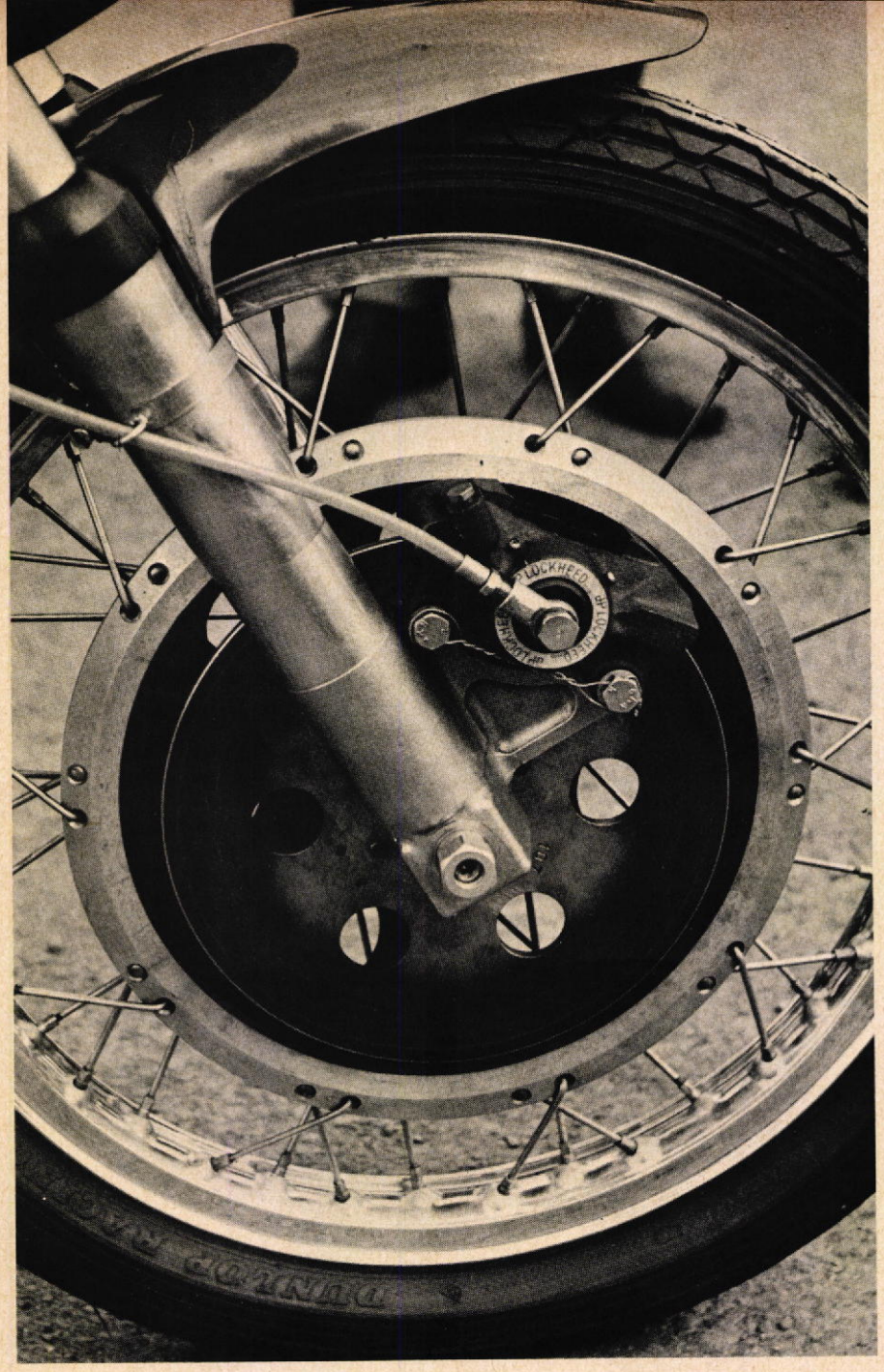
For additional information write: Yamaha International Corp., P. O. Box 54540, Los Angeles, California, Dept. CG-6-7 • Ask for free booklet "Common Sense Tips for Safe Sportcycling." • Canadian Distributor: Yamaha Division of Fred Deeley Ltd., Vancouver, B.C.

DISCOTECH

MOD STOPPERS FOR YOUR WHEELS

by Lynn Wineland





The complete wheel unit as fitted, showing the caliper mount on the right leg of the Rickman's own forks. Massive alloy leg holds gas-filled damper unit which obviates use of oil in forks. Brakes proved superiority at first competition outing, cinching win for prototype road racer.

THE FIRST APPLICATION of disc braking for motorcycling was only five years ago. Already immensely popular with racing cars and proven superior for aircraft, it seems strange no one had gotten around to using the disc on bikes. The initial attempt was an unheralded installation by a South African road racer named Hewartson, who hung a single caliper unit over a 9-inch disc replacing the drum brake on his home-built competition machine. Perhaps lack of great success with the machine over-all relegated the innovation to near obscurity, but the experiment was successful enough to arouse the interest of Rhodesian Colin Lyster, an enthusiast of modest success in trials and circuit racing. Lyster took the strong opinions developed to England, and though making no claims of qualification as an engineer, his enthusiasm and interest had caused him to thoroughly investigate the feasibility of adapting a disc brake to the front of then-current competition machines. Well aware of the inadequacies of normal drum brakes—even those large diameter units seen on the works racers—he campaigned the cause of the discs.

Drum brake performance was considered adequate for most applications on roads, in trials, scrambles and even on tracks as long as 'cold' braking was possible. But where high speeds and repeated braking were involved the drums had one inherent limitation—inability to dissipate heat quickly. Coupled with this was a lack of self adjustment, making frequent hand adjustment necessary during races. This *fading* condition once brakes were raised to high temperatures was conveyed to the rider as a temporary loss of braking power while linings and drum remained in the excessive heat zone. It was obvious that elimination or even a marked reduction in the degree of fade at high speed would have a significantly favorable effect on circuit lap times. Lyster hoped to put his theories into practice. He knocked on doors.

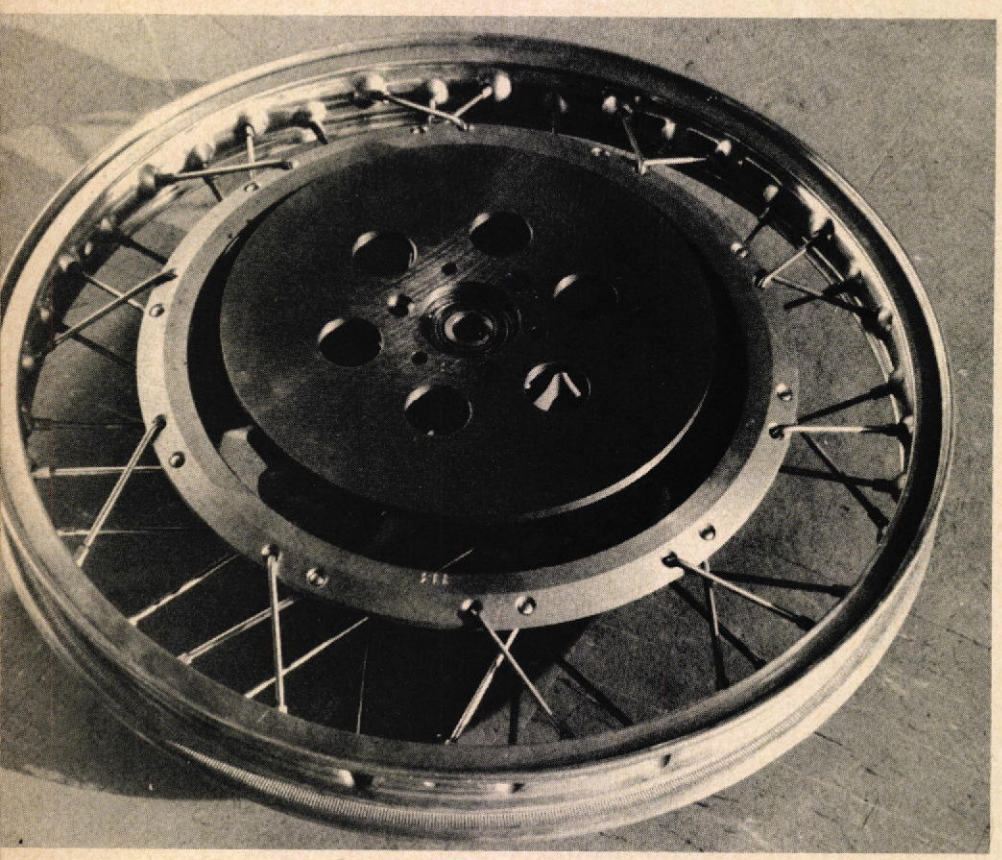
Lockheed of Great Britain provided unexpected response. The AG Group Competition Department at Leamington Spa was approached, and realizing that braking limitations were stifling development of engines and chassis, agreed to help by providing disc brake components, hydraulic equipment and unlimited technical advice.

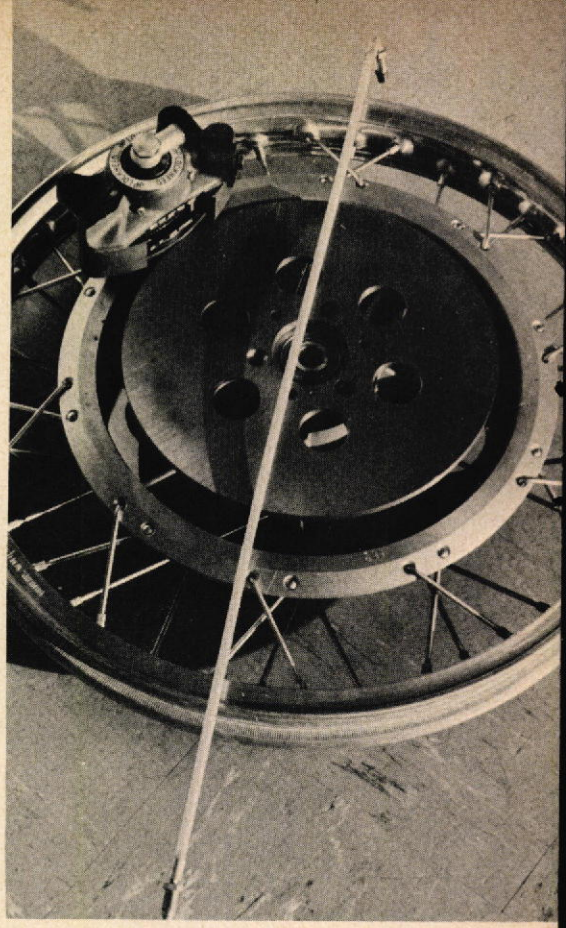
Lyster's first attempt at adapting the Lockheed disc for 'cycle installation used a standard BMC Mini-Cooper caliper on each side of the wheel with twin discs. The discs were 'floated' for self-alignment and worked very well, though in terms of cost it was well above that of the established drum brake.

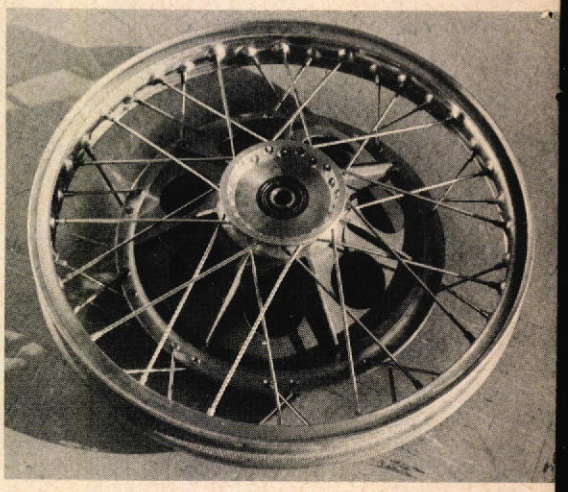
The use of a single disc and caliper at one side was a development for which the Leamington group was keen, but early thinking held that out-of-balance forces and heat distortion would be problematical. Thus work continued steadily on the more complicated twin-disc layout. British mo-

Rickman Metisse wheel uses heavy steel disc, lightened where possible. With cast alloy hub and Borrani aluminum rim, wheel as shown weighs 17 lbs.

Front wheel, caliper and plastic brake line provided. Alloy single-spot caliper was developed for Cooper Formula III racing cars, then adapted to bikes. Unit weighs 2½ pounds.







Lyster-developed wheel is now built by Rickman Bros. Alloy hub is large diameter on disc side and well vented to draw heat from backside of disc.

torcycle manufacturers began to show considerable interest in the project and collaboration with the AP Comp Department resulted, but the big manufacturers soon lost interest, presumably from a cost standpoint. It was nearly the end of the story, since only a chance of eventual adoption by industry would warrant further effort.

Still, experience gained even in the early stages prompted further investigation into designing a suitable wheel able to accept a solidly mounted disc and caliper. The finished result looked promising and together with a single disc, Mini-Cooper cast iron caliper and off-the-peg hydraulics, it was installed on a standard Norton, only the front forks being modified to retain the caliper. It worked . . .and *well*!

The system was bit heavy though, and anxious to trim weight, investigation was made into the possibility of using light alloy components. The Competition Department had at hand a number of alloy caliper assemblies as used on Cooper Formula III racing cars and supplied these together with several Lockheed master cylinders and hydraulic plumbing for several strictly experimental competition machines. The assembly was neat, consisting of a solid steel disc and one alloy caliper, similar to a competition car system. The promising results convinced Lockheed to make a limited production run on alloy calipers, though everyone realized that a proper business footing for the venture must take place shortly. The go-ahead caused a number of people both within and outside the organization to take another look. This was less than two years ago; and only then did the disc as a means of motorcycle braking appear to have possibilities for production use.

In the U.S., Airheart Products of Van Nuys, California drew on their experience with aircraft and racing cars to perfect and market a disc brake for the Harley-Davidson 74. Used on the rear, the conversion kit is easily installed and features Airheart's patented self-adjuster which compensates for lining wear, expansion and swell. Police departments report lining wear in excess of 40,000 miles. Still, at nearly $120 for the conversion, the feasibility of mass use looked distant.

England's well-known competition

sponsor Tom Kirby, owner of a virtual stable of racing bikes was approached in 1965 to see if he would fit the British Lockheed system to one of his machines. With the installation made, track tests proved highly satisfactory and Kirby was enthusiastic. Others remained to be convinced, maintaining that little competition or commercial future for the product existed, and truly enough, although many circuit miles of testing had been chalked up on several machines, a disc-braked 'cycle using these standard Lockheed car parts had never been raced. Being a 'one-off' operation to all evidences, laymen and even experts were cool, concluding "it can't possibly work!"

No one outside the tight band of those closely associated with the project really trusted the motorcycle disc brake. Tom Kirby's confidence and perseverance kept him going. Keen to try cast iron for the disc rather than the steel in order to cut production costs, he went through the lengthy process of casting a disc. The result was heartbreaking; the casting cracked on the first lap of a test circuit. The disc, it seemed, must be machined from steel.

The Rickman Brothers, famed as scrambles and moto-cross racers in international competition and well-known for their superb Metisse motorcycle chassis kits, were closely aligned with Kirby, drawing on his experience as a consultant in widening their line to include both road racers and street models as well as the ubiquitous scramblers. The first prototype road racer, with a typical Rickman frame of nickeled Reynolds 531 tubing changed but little in configuration from their rough-and-tumble model, housed a 500cc Matchless engine. New 'glasswork by Doug Mitchenall made the sleek beauty an outstanding art piece, and track performance was on a par. Completed early in 1966, the Metisse Road Racer prototype was fitted with the single disc and caliper brake. The caliper unit was merely clamped to the fork leg for initial running.

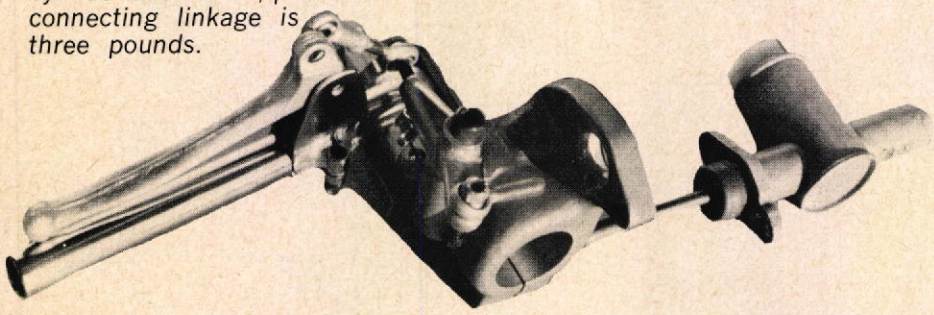
On its initial competition outing at Mallory Park, the Metisse won its race by outbraking everyone on the corners! The news traveled fast. Skeptics scratched their heads and re-evaluated. Optimism replaced pessimism and interest rose to a state of excitement in 'cycling circles. Manufacturers took a fresh look from other countries as well as the English. They were a bit too late.

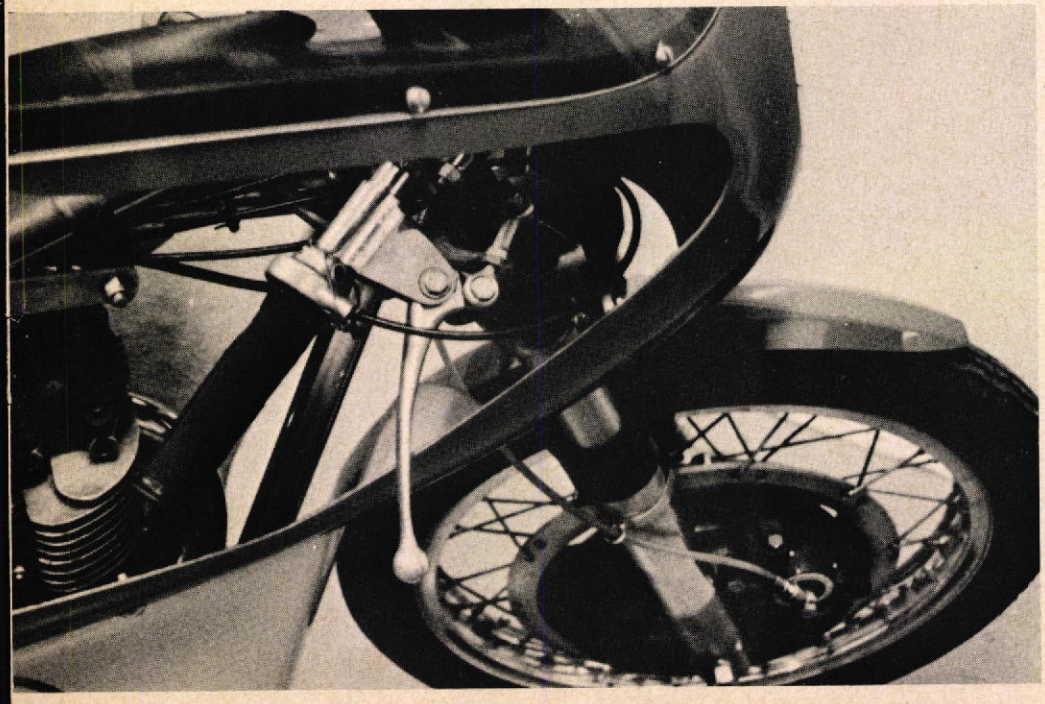
The progressive Rickmans, already producing series machines in running trim as well as their famous kits, were certain they could produce a complete road racer, competitively priced in sufficient production to meet demand. They had arranged to acquire the design and drawings for the special front hub assembly and were clear to purchase the Lockheed bike disc sets through Automotive Parts Group, parent corporation of the Leamington Spa Competition Department. AP Competition Manager Roy Fenner and the board felt confident that their painstaking research and development would be justly rewarded with the liklihood of further competition successes in private hands.

With the manufacturing rights to the Lyster-designed wheel and the ready adaption of an integral caliper mounting bracket to their own forks of new design, brothers Don and Derek Rickman foresaw new competition successes for the dozen or so promising riders who would be getting the initial batch of Metisse Road Racers. With such successes, widespread acceptance of this unconventional system would be assured.

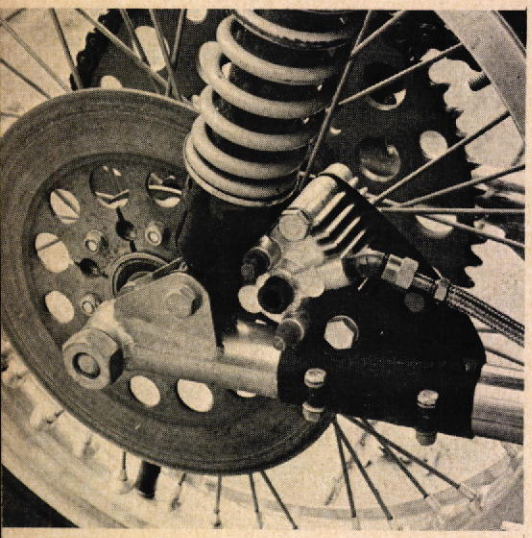
Rickman Brothers Engineering also made the disc available for their street model, then went on, working with the AP group to develop a rear disc assembly as well. Adaption of

Clip-on handlebar, brackets, linkage and master cylinder all affix to right fork stanchion tube. Added weight of cylinder and mount, plus extra connecting linkage is three pounds.

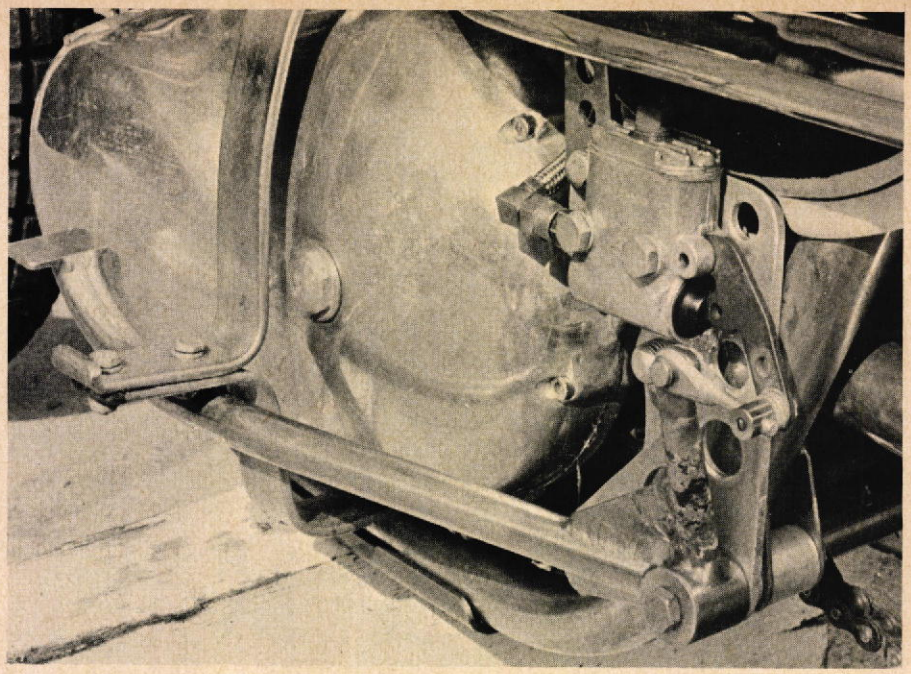




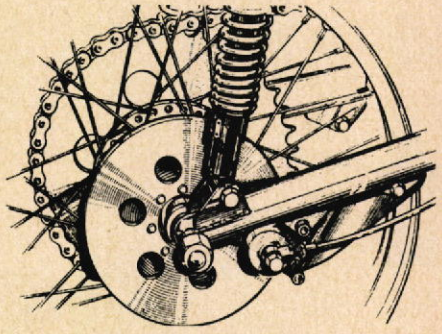
Although brake lever is in conventional location, all resemblance ceases from there on. Monkey-motion linkage actuates master cylinder for front brake caliper.



Rear wheel brake unit has Airheart go kart caliper. Total weight for all braking components added was a mere six pounds—far lighter than drum brake assembly which would have been employed otherwise.



Hydraulic master cylinder fitted snugly under exhaust pipe on Metisse scrambler works rear wheel disc brake off conventional pedal. Unit was taken from go kart application with no changes, weighs only a pound.



Success of front discs prompted development of rear wheel application as well. Sketch shows installation on Rickman Metisse Road Racer. (Drawings courtesy Motor Cycle News)

the systems by major manufacturers may be well in the future because of high manufacturing costs, but a proven system exists and time will tell if the disc will make the conventional drum brake a thing of the past.

The writer became enchanted with the potential of a disc brake for a cross-country racing bike a year ago. Since frequent high speed braking and fade were not factors with which to contend, the excuse had to be found elsewhere. A saving of unsprung weight through use of a small disc and caliper would be one. Additionally, the inherent characteristics of discs in resistance to temperature, wet weather and so on made investigation an adventure. The installation was to be made on a Metisse scrambler with 500cc Triumph engine. As nearly as possible it was to be a bolt-on installation (if it doesn't work, nothing's goofed!). Since most braking for the type of racing encountered is done with the rear wheel, the disc unit would be placed there.

The basic units selected are built by Airheart Products and are relatively inexpensive. They are extremely light; the master cylinder weighs one pound and the caliper weighs two pounds. Although a tough, plastic brake line is provided, we found an aircraft hose of proper length and fittings which is housed in braided stainless steel for fighting off wayward rocks. Surplus store price: 65¢. Where are such small brake units used? The source is almost obvious—go karts!

Since the standard kart brake disc was too small in diameter to locate the caliper in the desired position atop the swing arm, a new disc was made by turning the teeth off a go kart sprocket. The 1/8-inch thick disc was then thinned inside the braking surface and liberally drilled. Between each of the six mounting bolts the disc is split out from the center so inner portion is segmented to reduce warping when heat builds up from strenuous use. The disc bolts to a magnesium carrier (turned from an old go kart wheel hub) which rides on a splined section from a BSA *Gold Star* quick-change wheel. The splines allow the disc to shift laterally as the brake is engaged or released, centering itself to eliminate drag when not in use. Centered under the disc is a narrow, sealed ball bearing which is slide-fit on the rear wheel spacer, thus when braking, the load from the disc is transferred to the spindle without drag and the smooth slowing action works directly through the splines to the wheel. The caliper unit is held in a light gauge steel bracket made by heliarcing two fitted plates to a split section of tubing which clamps securely around the swinging arm. The caliper is held in place with the same two bolts which

Continued on page 78

RECIPE FOR FRIJOLE

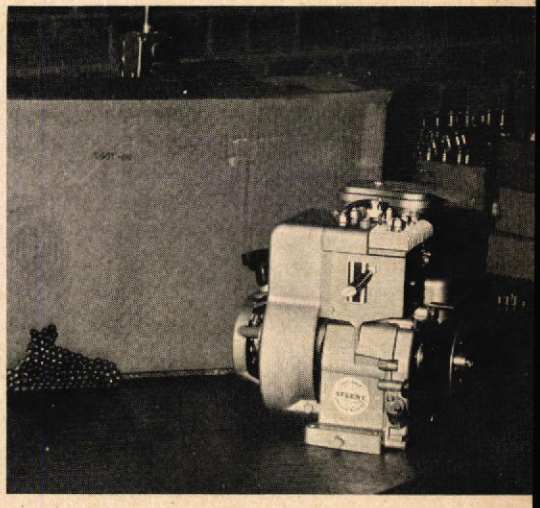
by Senor Hetzler & The Gringo

IT'S A BIG industry, millions of of motorcycles and twice as many people. My name is Dave Saturday, my pardner is Al Sunday, we're cycle writers, dum de dum dum.

On Monday the 13th, we were working the day watch out of Cycle Guide, assigned to the mini-bike division, our boss was Bob Meli, Chief of Assembly. We had been getting reports of an increasing number of people who were building their own fun machines. These machines had Spanish names. At first, it was believed they were being smuggled across the border, but a check with the border patrol failed to confirm this. An informer told the Chief that these mini-bikes were being packaged by Steen's, P.O. Box 2276, Alhambra, Calif. 91803.

Under further questioning, the stoolie admitted that the Frijole was an economy mini-bike kit with prewelded frame and forks. It featured twist throttle, friction brake, tires, wheels and saddle. We told him to stick to the facts. That's when he clammed up, but not after we'd gotten a good description: Kit #FKD60 (Frijole kit) could be purchased for $59.95, less engine, clutch and chain. A three horsepower, four cycle engine was $68.50 (ECK3).

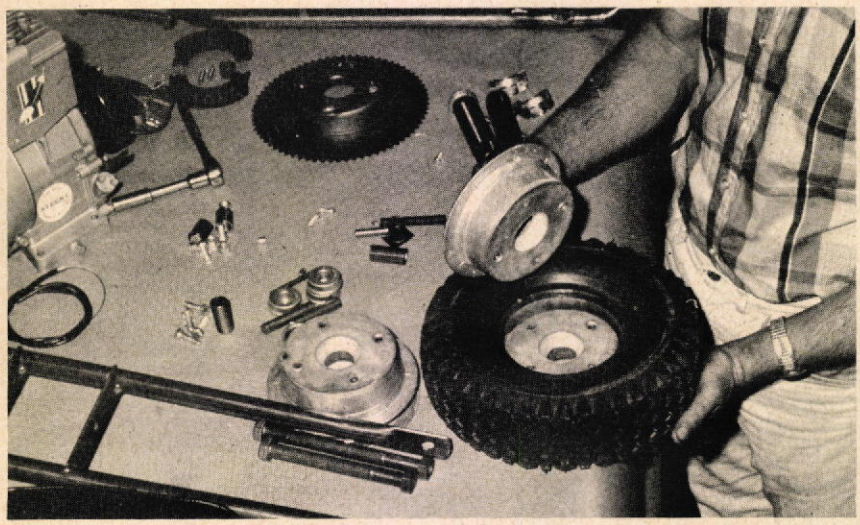
The Chief said the only thing we could do now was to wait for one.



***8:21 A.M.**—A truck pulled into the parking lot and dumped off a small box and engine. It was the Frijole.*

8:25 A.M.—*We broke open the box and examined the contents. Yep, it was the Frijole. Our job, . . . build it. Dum de dum dum.*

8:30 A.M.—*Laid the parts out for assembly, not much here. Just want the parts, Ma'am.*



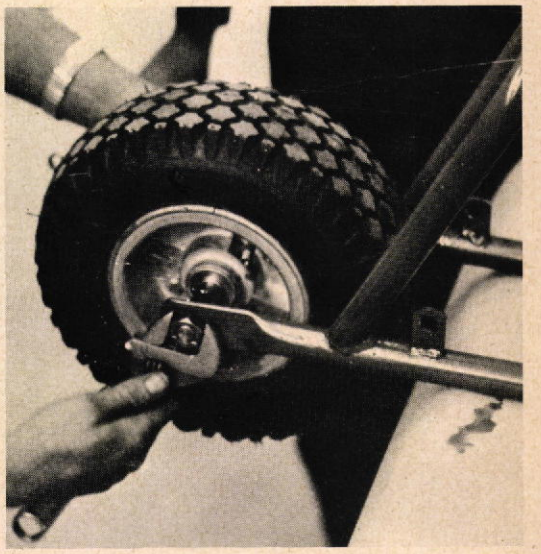
8:34 A.M.—*First came the rear wheel and brake assembly. Had to admit it's pretty simple.*

8:45 A.M.—*Engine mounting plate had to be welded. Al was left on stake out. The Chief and I cut out.*

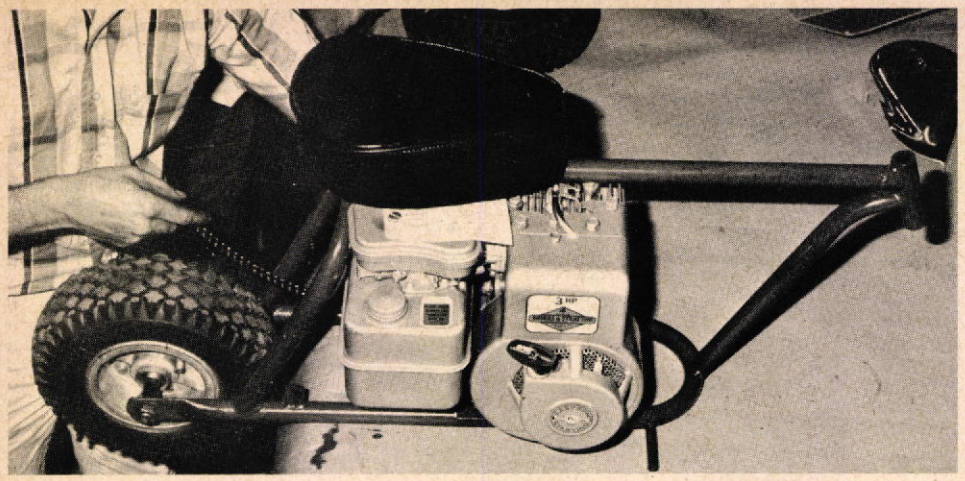
9:15 A.M.—*We got the engine mounting plate welded to the frame, also the foot pegs and brake adjusting nut.*

9:45 A.M.—*We returned to the scene of the grime. The frame and forks were painted. Al missed coffee . . .*

9:55 A.M.—*We left the parts to dry and assigned Al to stake out while we went for coffee.*



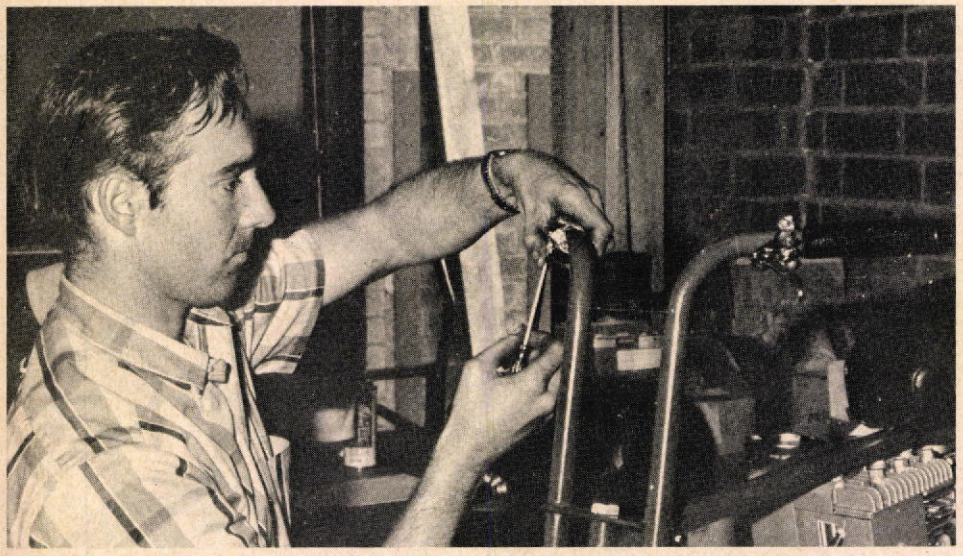
10:10 A.M.—*The paint was dry enough to continue. Al was angry. We forgot to bring him coffee.*



10:15 A.M.—*The frame, engine and rear wheel were assembled. The chain was connected.*

10:35 A.M.—*The whistle blew, it was a break, coffee break. We left Al on stake out.*

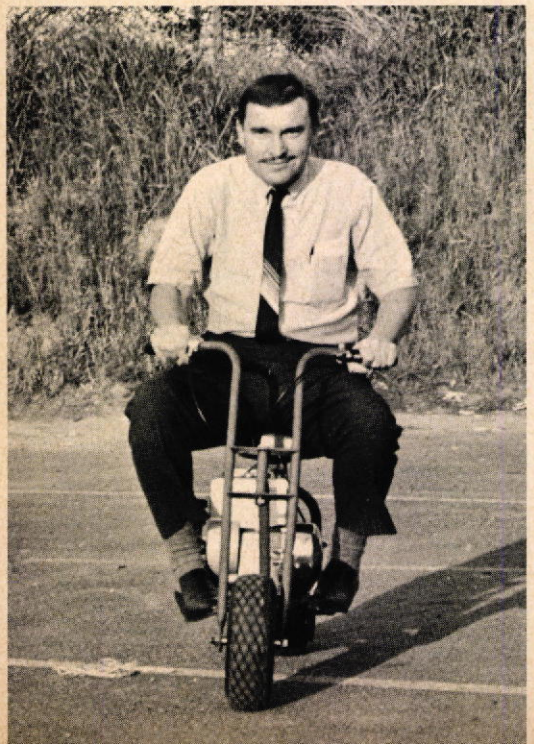
10:50 A.M.—*On went the front forks and wheel. Al was very angry. We forgot to bring him coffee.*



11:10 A.M.—*Next, the controls were attached. You know, throttle wire and brake cables.*

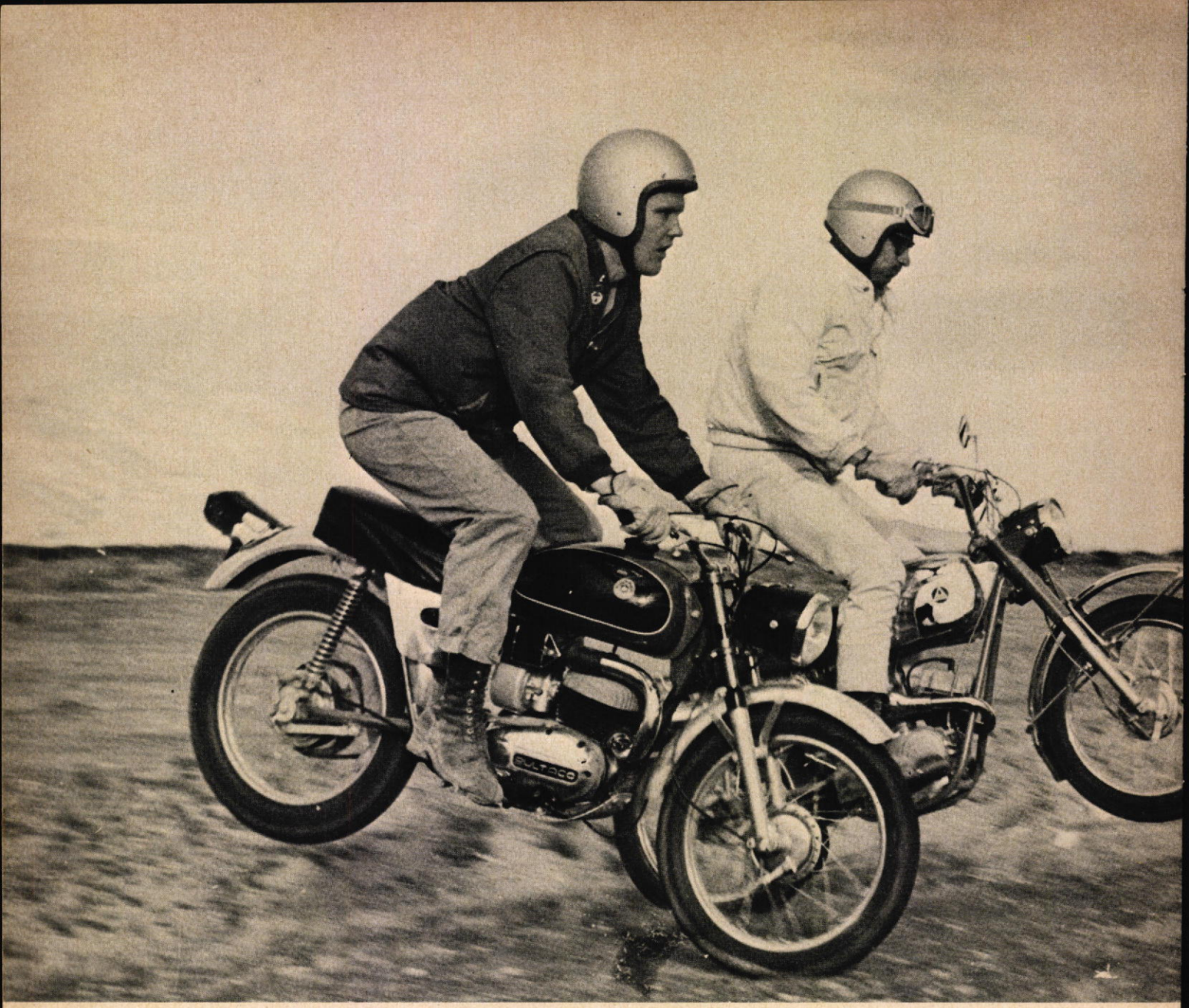
11:25 A.M.—*After adjusting the cables, only gas and oil had to be added. It was ready for trial.*

Trial was held in the Cycle Guide parking lot, above are the results of that trial. The Frijole really ran.



Everybody had a crack at the Frijole and the Frijole had the same chance.

Our fearless secretary, Lois couldn't believe a sack of parts could really make something as cute as the little Frijole. Dum de dum dum. ■



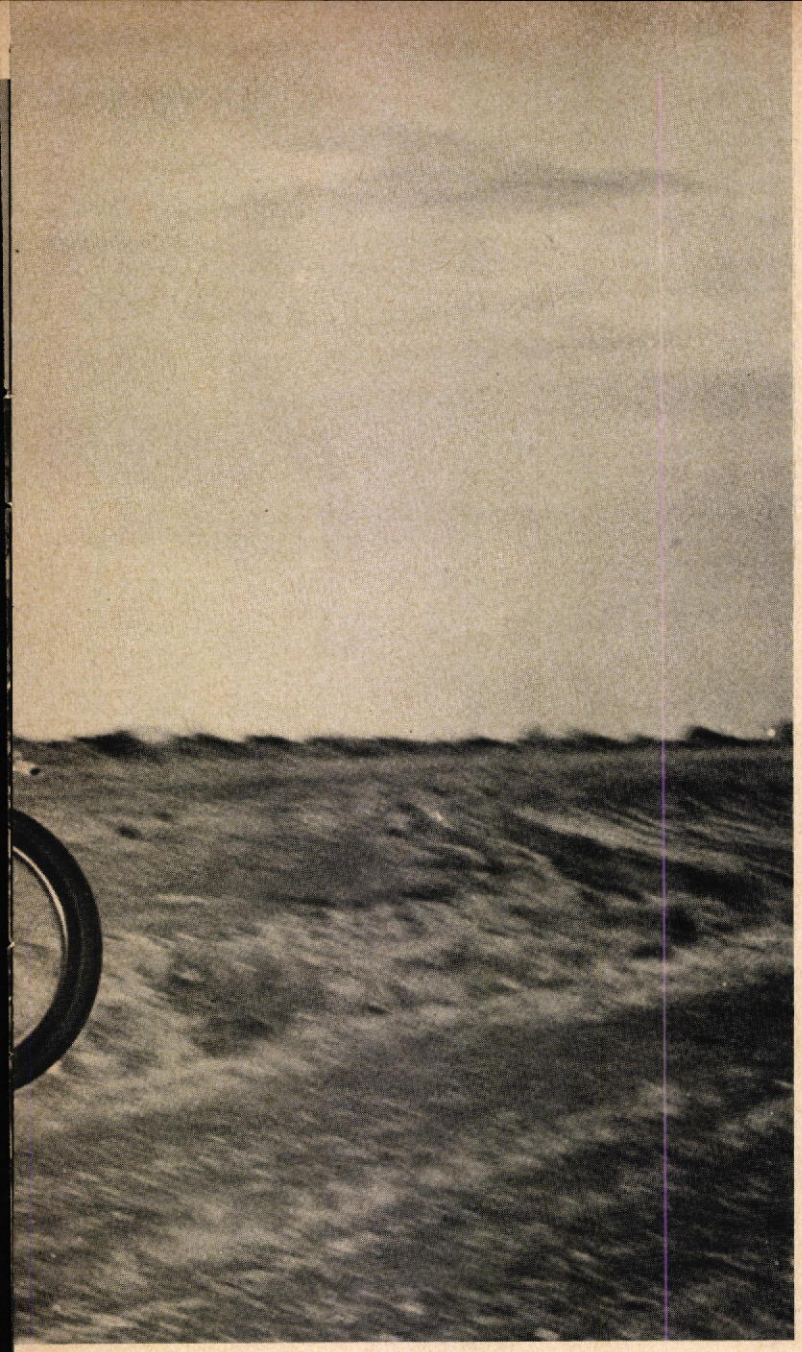
HOW WOULD YOU like to take seven trail bikes, throw them into the back of a truck, head into the back country for a week and then come home and tell the wife that you have been working like hell for the past seven days. This was the assignment for us at Cycle Guide this month, to test the big seven in trail bikes. The Hondo 90, Suzuki Hill-Billy 80 and Bearcat 120, the Yamaha 100 Trailmaster, Bultaco Lobito, the Bridgestone 90 and the Hodaka Ace 90. The area we use for testing is in the California high desert around Lancaster and Mojave. This locale provides desert, mountains and just all round good testing areas.

All of these machines with the exception of the Honda are powered by two cycle engines. The Honda is also the only bike to retain the cut-away frame. This is a concession to the true trail rider in case he has to dismount in a hurry. The only problem in this is that 85% of the motorcycles sold as trail bikes never see the trail. They are used as road bikes first and part time scramblers second. The other manufacturers seem to realize this and have either dropped their cut-away frames or they never built one in the first place. However, Honda leads in trail bike sales so perhaps they know something that the others don't.

Honda was the company that started the whole motorcycle boom in this country. With their massive advertising budget they brought the motorcycle out of the gutter and into the home. Along the way they decided to open the heretofore untapped trail market. The result is that all the companies that make trail machines now combine to sell over 300,000 units annually.

Taking the machines one at a time we'll start with the Honda inasmuch as it is the leading seller. For 1967 Honda has just announced their new Posi-Torque model. This new machine offers as standard equipment an auxiliary transmission incorporating an automatic selector lever which enables the rider to change from street to trail gearing without changing sprockets or chains. This is without a doubt the biggest advance in the trail market in some time.

The one problem we encountered



TRAIL BIKES ON TRIAL

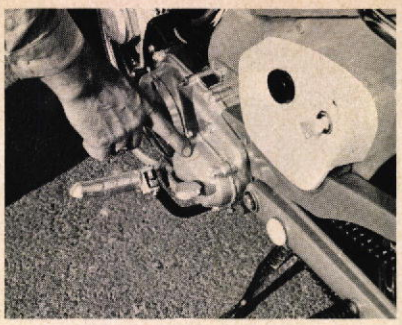
We compare them all: Bridgestone, Bultaco, Hodaka, Honda, Suzuki & Yamaha

with the 90 was the front forks. In this day of telescopic forks we can see no reason why Honda continues to use the pressed steel leading link type suspension. Contrary to popular belief, they are not less costly to repair because if the outer pressed steel cover is bent it must be replaced. A telescopic fork can be straightened if not too badly bent. Aside from this one point the Honda is one of the better machines on the market. The overhead cam engine is known for its reliability. The gears in the transmission could handle the power of even a 250 cc engine with little fear of breakage. This fact can be said of all the Japanese bikes, no matter what displacement they are.

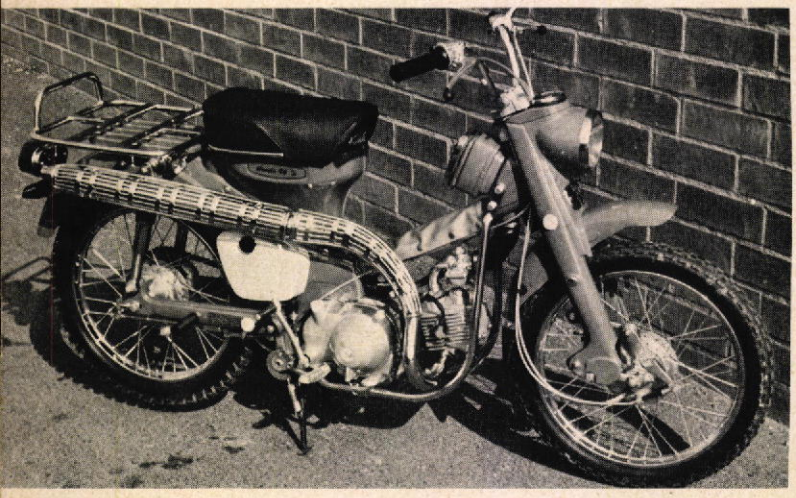
The most likeable feature of the Honda is placing an extra rear brake lever on the handlebar where the clutch lever is normally located. When one is coming down a steep, rocky hill with feet down for stability this added lever can be a godsend. This is possible because the 90 utilizes a centrifugal clutch. This clutch arrangement is very controversial, some people like it, some don't. We prefer a hand clutch because it lets a rider control his engine whereas with a centrifugal clutch one is at the mercy of the engine revs. However, for a new rider it eliminates one more problem to trouble him when on the trails.

Accessories that come as standard equipment are the big chrome rack for carrying bedrolls, canteens, tents etc., knobby tires and mirror. One of the more interesting features is the use of a plastic front fender. Even though many people complain that Honda is too cheap to put a steel or alloy fender on they fail to realize that the plastic can be bent many times with no breakage. This is very worthwhile in terms of dollars and cents. With the new transmission Honda should be able to remain solidly on top of the trail bike market.

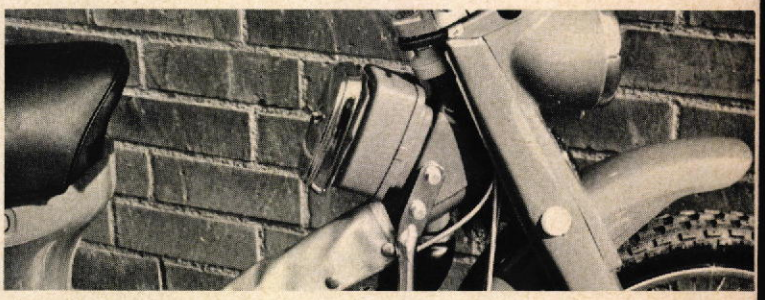
The Yamaha Trailmaster 100 incorporates all the features that are needed for trail use. *Big* knobby tires, luggage rack, eight inches of ground clearance, three way adjustable heavy duty rear shocks, five inches of travel in the front suspension, oil injection on the two cycle engine and electric starter. For the first time a company



The secret is in the hump, Honda's Posi-Torque transmission.



An overall view of the Honda shows the cut-away frame, the sturdy engine guard, big rack and the leading link forks.



The air cleaner is mounted up out of the way on the Honda. This is a good feature as it prolongs engine life.

has taken a projected model and designed it primarily for the trail and then let the street machine follow. This is not to say that the 100 isn't a good street machine, because it is, but 'Trailmaster' is an apt name.

The engine is the big brother of the tried and reliable 80 cc engine that Yamaha has used since mid 1963. Bearing this in mind we have no doubt that, even though a new model, it will be as dependable as the 80.

The one drawback to the 100 is the weight. The manufacturer claims 220 pounds but we feel they are 20 to 25 pounds light. However, the engine seems quite capable of pulling this around so unless one falls over, the weight will not be felt. With this one exception the Yamaha came out on top of the heap in our comparison test.

The other brands have part of the features that the Yamaha has but not all wrapped up in a nice neat package. Of all these features perhaps the most controversial is the electric starter. As Yamaha is the only manufacturer to offer this convenience on a trail bike, one might ask why it is not available on the other machines. The starter unit weighs eight to ten pounds which is added weight that is not needed or so say some distributors. However, if the powers-to-be were ever to ride in the mountains, kill the engine on the side of a steep hill and then try to restart, holding the brake, finding neutral and trying not to fall over, perhaps they would see the benefit of just pulling in the clutch and pushing a button. Yes, we said just pull in the clutch; the Trailmaster will start in any gear. It will also kick start in gear with the clutch in.

One of the minor problems encountered by most trail bike manufacturers is that of breaking shock absorbers. The rear suspension units on the Trailmaster look like they came off the Big Bear scrambler. It is doubtful that these units could be destroyed with anything less than a hammer. They have three inches of travel and are three way adjustable so the spring rate can be changed according to the load carried. Combine these with the front forks and you have one of the better handling machines on the market.

YAMAHA TRAILMASTER 100

PERFORMANCE:

Maximum Speed	40-45mph (Std. spr: 60-65 mph)
Climbing ability	more than 35°
Minimum turning radius	73.6 in. (1,870mm)
Brake Distance	23 ft. at 22 mph

ENGINE:

Lubricating system	Yamaha Autolube
Bore & Stroke	52×45.6mm
Displacement	97cc
Compression ratio	7.2:1
Maximum horsepower	9.5ps/7,500 rpm
Maximum torque	0.94kgm/5,500 rpm
Starting system	Kick and electric

DIMENSIONS

Overall length	74.8 in. (1,900mm)
Overall width	28.1 in. (715mm)
Overall height	42.5 in. (1,080mm)
Wheelbase	47.2 in. (1,200 mm)
Minimum ground clearance	6.7 in. (170mm)
Weight	205 lbs. (93kg)
Fuel tank	8.4 litre (2.2 gal)
Oil tank	1.6 litre (1.7 qt.)
Tires (Front & Rear)	3.00-18-4PR

HONDA TRAIL 90

ENGINE:

Type	four-stroke overhead cam single cylinder
Displacement	90cc
Bore × Stroke	50×45mm
Compression	8.2:1
Horsepower	7.0 at 8,500 rpm
Carburetor	Keihin 18mm
Clutch	Automatic
Transmission	4-speed foot shift

PERFORMANCE:

Maximum speed	57 mph
Climbing ability	50 degrees

SUSPENSION:

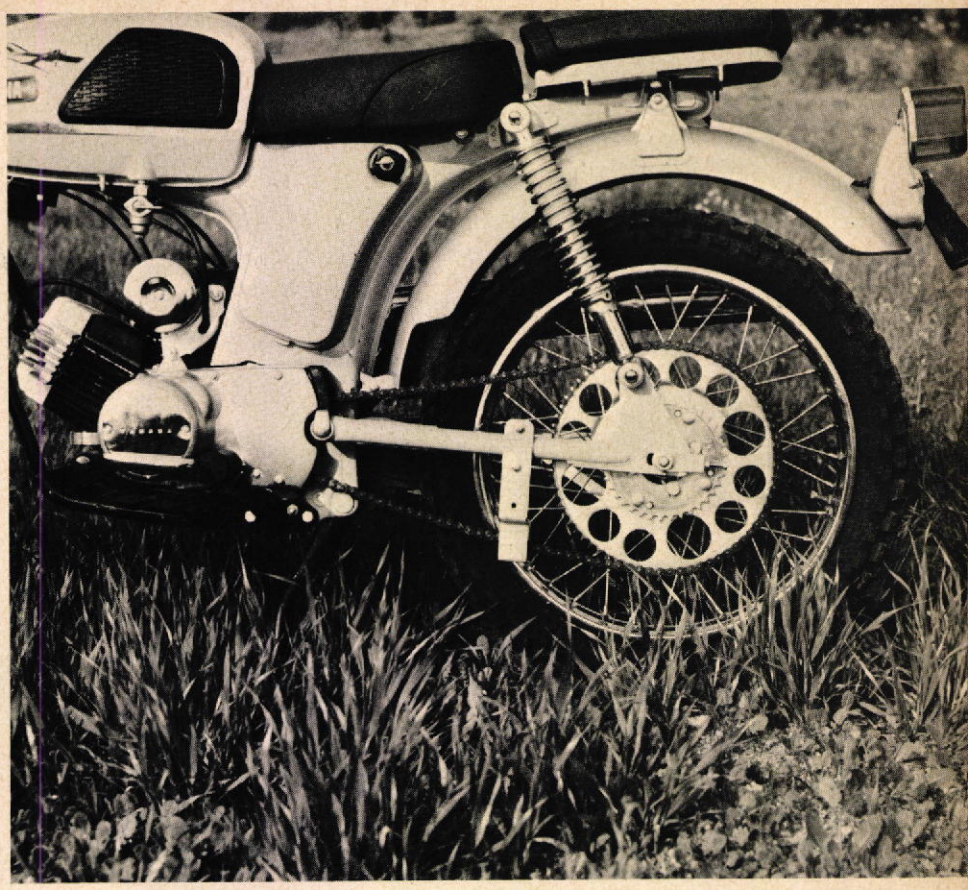
Front	Leading link
Rear	Telescopic

WHEELS

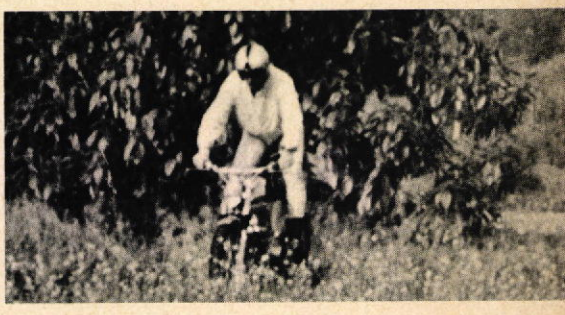
Front	2.50×17 inch
Rear	2.75×17 inch

DIMENSIONS:

Overall length	71 in.
Overall width	25 in.
Wheelbase	47 in.
Overall height	39 in.
Height to seat	31 in.
Ground clearance	6 in.
Weight	180 lbs.



Big shocks, big tires, and very big sprockets mean the big Yamaha Trailmaster.



For the first time Yamaha offers 18 inch rims on their trail machines. They are shod with the biggest three inch tires we have ever seen. These tires, while not really suited for the street, will be allright if ridden carefully and in a vertical position. However, on the trail they are excellent.

Yamaha has one of the better methods of changing the rear sprockets. If the chain is on the trail sprocket, you merely remove the four bolts holding the big sprocket on, push the sprocket back and rotate it forward until the bolt holes line up, replace the bolts, remove the extra section of chain and there you are.

With all the features that Yamaha has incorporated in their new entry into the trail market it would appear that they have a real winner on their hands. Only time will tell.

The two Suzuki's we'll take together inasmuch as the 80 cc is a miniaturized version of the Bearcat. With the exception that the Hill-Billy is slightly smaller all the way around the two bikes are very comparable. Both use the Suzuki Posi-Force method of oiling the two stroke engine. The feature of this system is that the main bearing surfaces of the engine are pressure fed instead of relying on an oil mist flying around in the crankcase.

Both the Hill-Billy (80 cc) and Bearcat (120 cc) have a number of well thought-out features. One in particular is that of a high clearance front fender. It is mounted to the upper portion of the forks so it is immovable. At rest there is five to six inches of clearance between the fender and front tire. This has the advantage of not allowing mud, slush or what have you to clog up between the two.

The Suzukis also have the best racks of all bikes tested. This seems like a minor thing but when one is contemplating a trip into the back country it's nice to know you can count on carrying all you feel is necessary.

These machines have enough fork and shock travel to give a comfortable ride. Also both bikes have three way adjustable rear shocks. As we mentioned before it is convenient, when carrying heavy loads, to be able to vary spring rates.

The engine guard on the Bearcat is

SUZUKI 80cc

DIMENSIONS

Length	72.0"
Width	24.1"
Height	33.7"
Wheelbase	45.7"
Dry weight	154.5 lbs.
Fuel tank capacity	1.6 gals.

ENGINE

Type	2-stroke air-cooled, single cylinder
Bore & Stroke	45mm×50mm
Compression ratio	6.7
Carburetor	VM17SC
Starter	Kick

PERFORMANCE

Maximum output	8 hp/7,000 rpm
Maximum speed	38 mph (60 mph w/touring sprocket)
Climbing ability	50° or more
Fuel consumption	153 mpg/25 mph w/touring sprocket

OTHERS

Transmission	4 speed, synchromesh
Clutch	Multiplate wet disc
Brakes, front	Mechanical
Brakes, rear	Mechanical
Tires	2.75"-17"-4PR, knobby, front and rear
Suspension	
front	Telescopic, oil dampened
rear	Swinging arm, oil dampened

mounted to the frame with a chrome brace. Hence, if the machine is ridden over rocky ground the shock of hitting boulders is absorbed by the frame instead of the engine. On some earlier trail machines the guards were attached to the engine and if struck by rocks at an angle the crankcases had been known to break.

The tires on these machines are indeed knobbys. They are completely useless on the street. Either they will let one down when going around a corner or, if not, will wear out in less than 1,500 miles. Even though the Suzukis are meant as trail machines we feel they could have made a better choice and perhaps picked a more universal style tire.

The Suzukis have folding footpegs and spark arrestor mufflers. The footpegs are convenient when one is in rocky country trying to pick a path through boulders. One can always slow to a near stop and fold the pegs by hand. One good feature is they are spring loaded and return to place automatically. A very disconcerting feeling is to go around a corner dragging the peg, straighten out, put your foot where the peg should be and find it is still folded next to the frame. As to the spark arrestor we can only say we feel that all trail bikes should come equipped with them. It not only keeps the forest rangers happy but perhaps stop some of the lawmakers from trying to keep us all off the trails.

Suzuki does not use the rotary valve engine on either machine. This is a little surprising with their racing background, however both bikes run as well as their competition does with these valves so one cannot find fault with their thinking. Both machines are the straight forward piston port type, nothing to break and therefore nothing to spend money on to repair. The crankshaft runs on ball bearings, and the rod on caged needles so there should be no trouble in the expensive end of the bike.

Surprisingly enough the staff favored the 80 cc machine over its bigger brother. Perhaps it's because the Hill-Billy seems better balanced, or maybe because it's a little lighter. This is not to say that anything is wrong with the Bearcat, but trying to choose between the two is akin to having to

SUZUKI 120cc

PERFORMANCE

Maximum output	11 hp/7,000 rpm
Maximum speed	
touring sprocket	Approx. 65 mph (105 kph)
power sprocket	Approx. 43 mph (69 kph)
Maximum torque	8.82 ft-lb (1.22 kg-m) 5,500 rpm
Climbing ability	Over 30 degrees

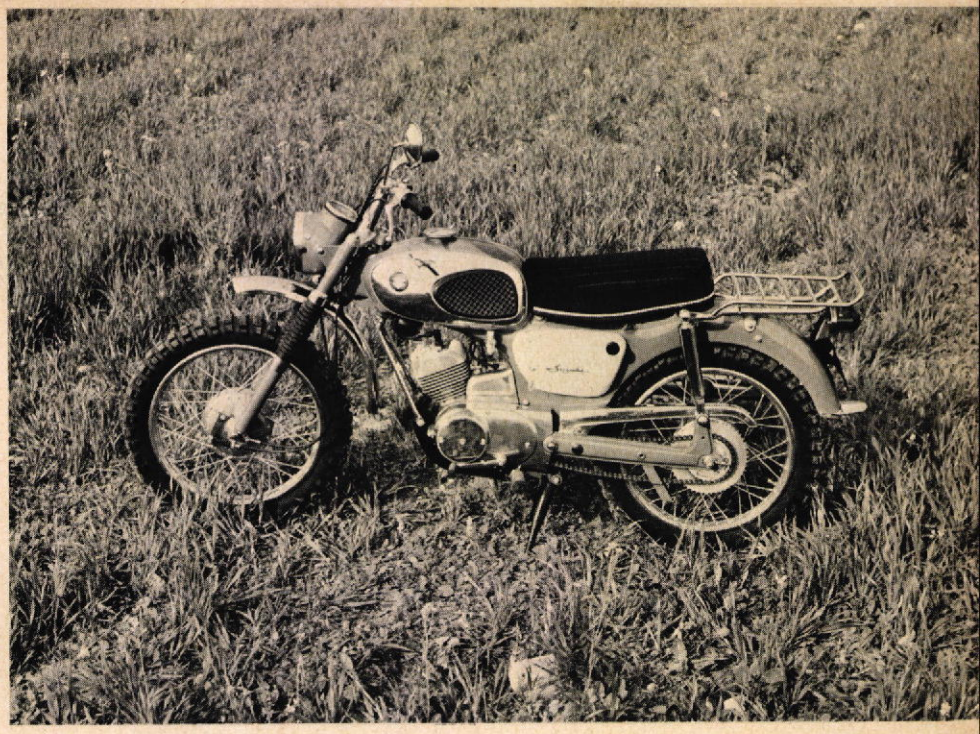
ENGINE

Type	Air-cooled, two stroke single aluminum alloy with cast iron liner
Displacement	118cc (7.2 cu. in.)
Bore and stroke	2.05×2.20 in. (52×56mm)
Compression	7.2
Lubrication	Suzuki POSI-FORCE
Carburetor	Mikuni 0.79 in. (20mm) bore
Starting	Kick
Ignition	Flywheel magneto
Transmission	4-speed return shift
Clutch	Wet multiple disc

DIMENSIONS

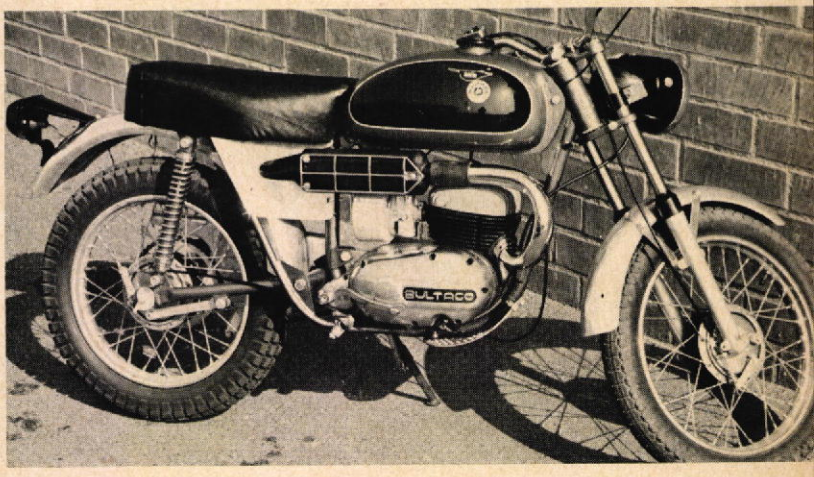
Length	75.7 in. (1,923mm)
Width	29.3 in. (745mm)
Height	39.6 in. (1,005mm)
Wheelbase	48.0 in. (1,220mm)
Ground clearance	6.5 in. (165mm)
Dry weight	203 lb. (92 kg)
Gasoline tank capacity	2.1 US gal (1.8 Imp gal or 8 liters)
Oil tank capacity	1.4 US qt (1.2 Imp qt or 1.3 liters)
Suspension	
front	Telescopic fork
rear	Swinging arm
Tires, front and rear	3.00-17 in., 4 pr, knobby tread

* Specifications subject to change without notice.



With its polished engine cases, the Suzuki makes a nice picture at rest.

Mounted high and rigid, Suzuki's front fender is one of the best. Note the rubber covered forks.



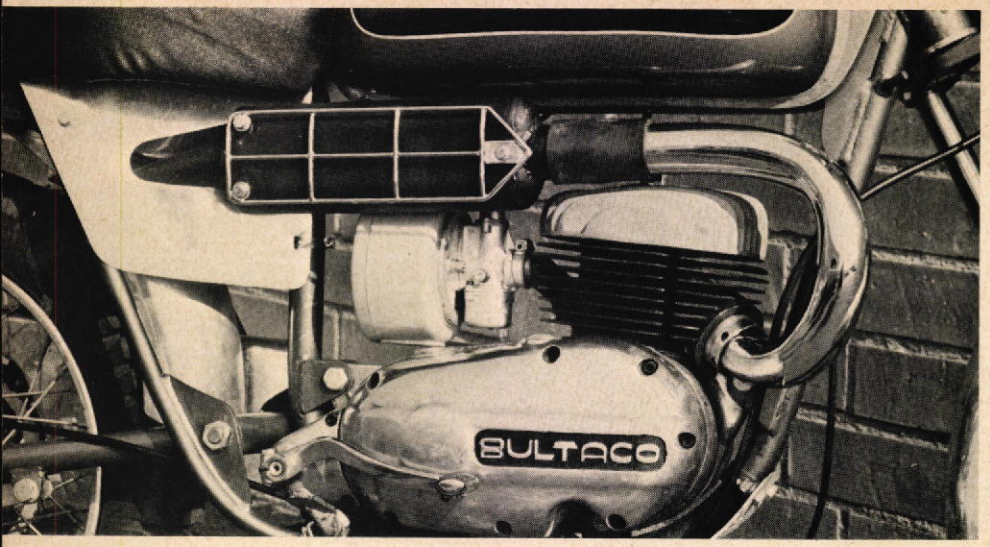
Clean and uncluttered is the best way to explain the Bultaco.

make a choice between a Ford GT and a Ferrari P4. Both are winners no matter how you look at it.

Good power, outstanding handling describe our next machine, the Bultaco Lobito. Our first ride on the Lobito found us disappointed with the power available, however this was on the street. When the Lobito was taken into the desert it was a different matter. Bultaco has put the ponies on the low end of the scale where it really counts. Even though some of the other machines tested were quicker in a straight line, in the rough we found that the Lobito could be run faster than the rest because of its fantastic handling ability. Up, down, smooth, rough, it didn't seem to make any difference to this machine and its suspension. If one were to stand back from a distance he might think he was looking at one of the Bultaco racers that had been left out in the rain and was not Sanforized. The forks and shocks are a direct copy of those found on the Pursang.

The engine of the Lobito is the piston port type. It worked on the large Bultacos so the factory had no reason to change for their little bike. In stock form it produces some ten horsepower. We were informed by the West Coast distributor that the factory is, in the very near future, going to provide a hopped-up kit consisting of a new head, cylinder, piston, intake manifold and carb., close ratio gears and various seals and gaskets needed to put the bike back together. This kit will bring the horsepower up to 14½. This is also going to be marketed as a scrambler that will be in the shops by the time you read this. This will take the Lobito out of the trail bike class and move it into an all out racer. Don't despair though, they are going to keep the Lobito in trail form. This way you can have your cake and eat it too.

One problem we ran into was that of the engine dying at idle. This, we discovered is due to the tail light being burned out and causing a power drop at low rpm. This situation has been corrected on all new models by the use of a Zener diode to provide constant spark at any engine speed. This improvement, along with the California Highway approved lighting system brings the electrical equip-



Leg burns, go away. The wire guard is here to stay.

Even though painted, the Lobito's tank is pretty and shiny.

Big knobby ripped wiring.

BULTACO LOBITO

ENGINE:

Piston displacement	99.06cc
Bore × stroke	49.5×51.5mm
Horsepower	10 at 8,000 rpm
Compression	10:1
Carburetor	Zenith 18mm
Transmission	4 speed foot shift
Clutch	Multiple plate, in oil bath

PERFORMANCE

Maximum speed	60 mph
Climbing ability	50 degrees

SUSPENSION

Front	Telescopic
Rear	Telescopic three way adjustable shocks

WHEELS

Front	2.50×17 in.
Rear	3.25×16 in.
Weight	174 pounds

ment up on a par with the Japanese bikes which have the best electrical systems in the world.

The 18 inch rims have a universal tire mounted on the front and a knobby on the rear. This combination offers a good compromise for both street and trail. The brakes on the Lobito are very good. Under hard riding after many hours they showed no tendency to fade.

The Lobito does not offer any type of oil injection. Although time consuming it's no problem to buy a five gallon can and brew up your mix at home. With the other features that Bultaco makes available you can't have everything. The machine sells for a fair price considering what you get for your dollar. The best handling bike in its class, more than enough ponies for what it was designed for, and also, in our humble opinion, it's one of the best looking machines around.

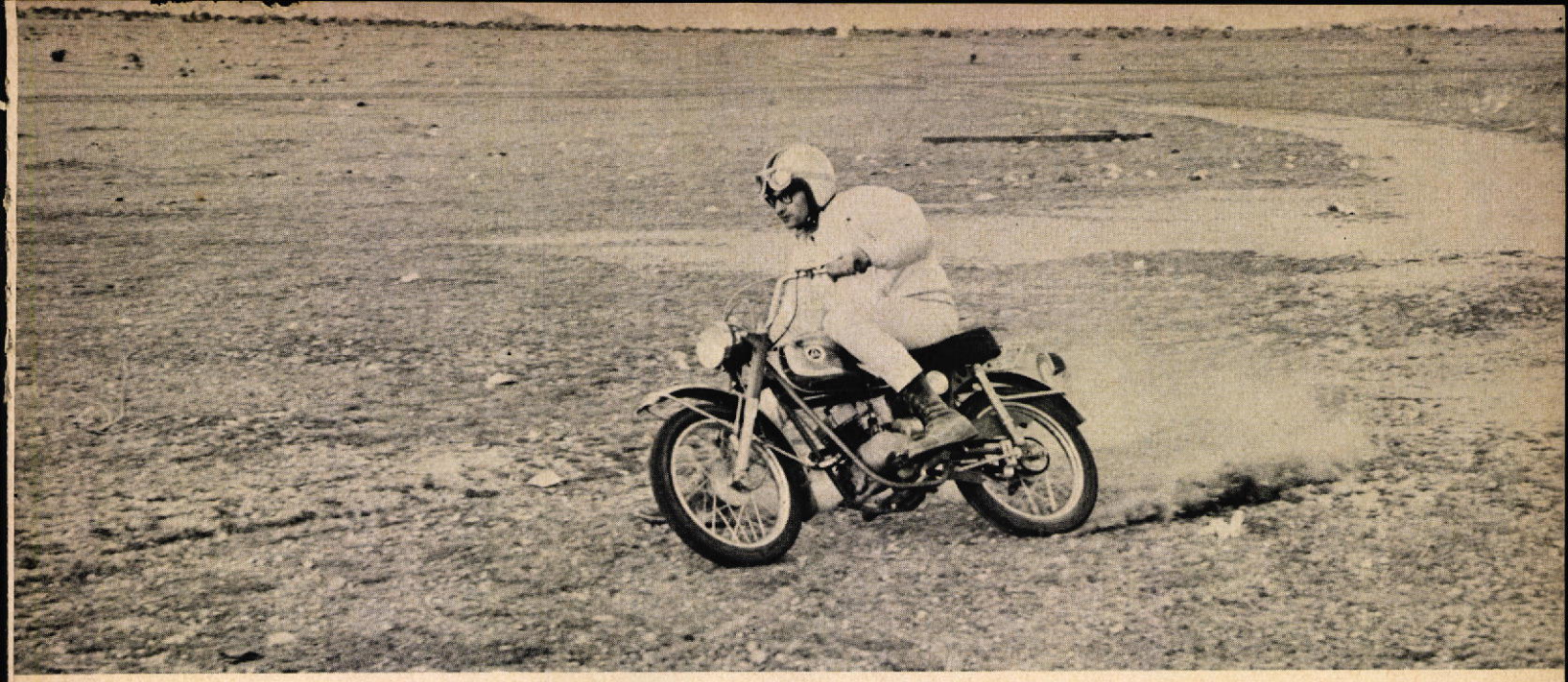
One problem we did find hard to live with was the muffler. To start with, it is not a spark arrestor and we feel that all trail bikes need this piece of equipment. Also it slows down the noise but it sure doesn't stop it. If one was to accelerate past a policeman he would be asked just where the fire was. At 40 miles per hour it sounds as though one was going at least 80.

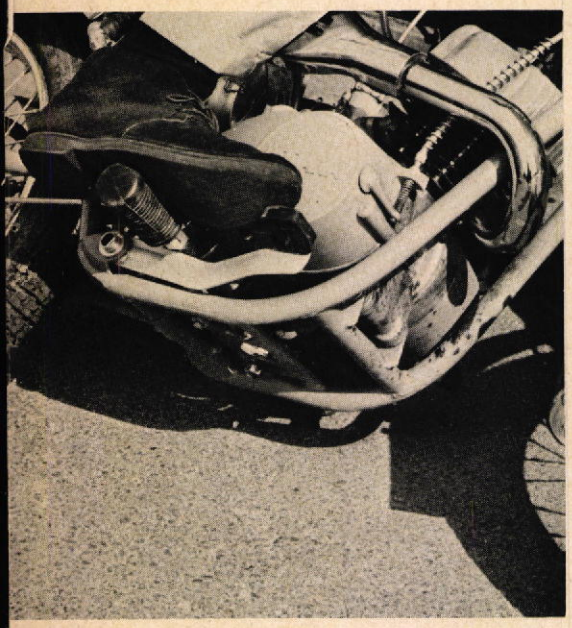
With this minor exception we found the Bultaco a fine machine for the experienced rider but we would suggest the novice find something that is not quite as hot as this Bul from Spain.

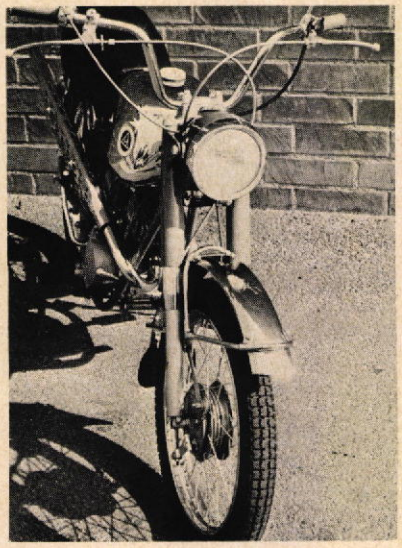
The fun machine of the group was the Hodaka. Fast, good handling and light on its feet, it found more use than any of the other bikes. Not only was it used in the test but the fearless Managing Editor used it at a riding school for budding road racers. This shows how versatile this machine is. A trail bike one day and a road racer the next.

Hodaka is a little manufacturer in Japan that builds only the Ace 90. They have been asked many times why they don't build larger bikes and their answer is do one thing and do it well. This thinking is borne out with the tube frame, super fast Ace 90.

Very few things could be faulted on this bike. One is no spark arrestor,

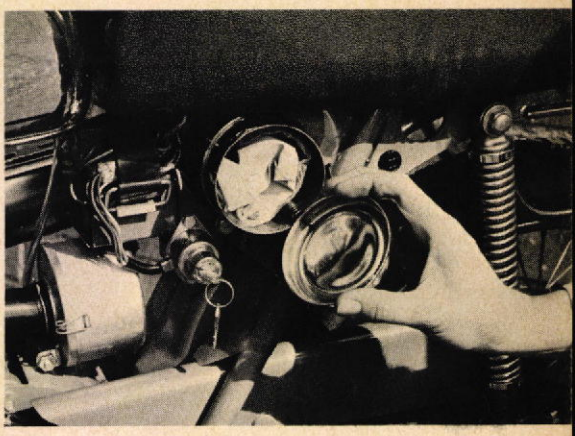






The Hodaka has no engine guard but notice the tube frame.

A head on view shows the Wide handle bars, chrome fender and the Universal tires.



Hodaka provides a good selection of tools and a convenient place to carry them.

another is we feel that the front forks could be stiffened up some to provide a better ride in the rough stuff. This could be accomplished by using a heavier weight oil in the forks. This is not to say that the machine handles poorly now because this is just not so but why not make it even better than it is. The heavier oil would certainly not detract from the ride on the street and it would help in the dirt.

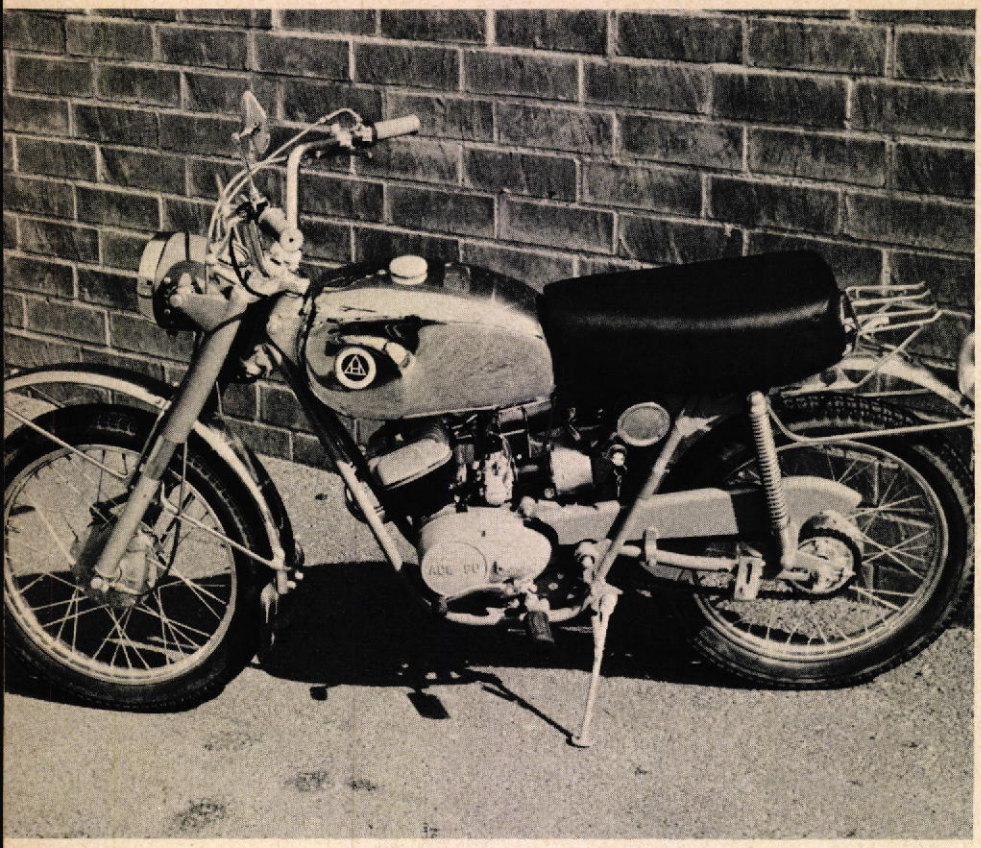
Hodaka, like Bultaco and Suzuki, stick to the piston port engine. In this case we feel they deserve an extra star in their crown because the Ace 90 showed no tendency to load up at low speeds. There is nothing more frustrating than to be idling along a trail and all of a sudden turn on the gas to lift the front wheel over a rut, log or whatever, and have the engine bog and let you down literally.

The transmission on the Ace worked to perfection with the exception of trying to find neutral. This was comparable to losing a dime in a drain gutter and fishing for it with string and gum. It can be done, but don't count on the results. However, shifting from gear to gear was like the proverbial knife through butter. From our sources of wisdom in the field, we have never heard of any trouble in the Hodaka gear box.

Hodaka should be congratulated on their double loop frame used on the Ace. It is without a doubt the finest frame available in the lightweight market. Light, but not to the point where it will break under hard riding. Rigid, with no sign of frame flex. All of Hodaka's competitors have some improving to do to approach the standards set by the handling of this fine motorcycle. The only minor fault we could find was the oil in the forks is too light for serious motoring in the rough. Changing this to 30 weight should clear up the problem.

One point that proves the engineers at Hodaka have a sense of humor is the luggage rack. If a person was to carry a penny piece of bubble gum he would have enough space, but anything larger than this he would need a knapsack on his back.

The tires on this machine are not for serious dirt work in that they are too small and are of the wrong size



Dominating the Hodaka is the chrome gas tank.

HODAKA ACE 90

ENGINE:

Type	25° inclined single cylinder two-stroke air-cooled gasoline engine.
Piston displacement	90cc (5.5 cu. in.)
Bore × Stroke	48mm×50mm (1.89"×2")
Maximum output	8.2 HP/7,500 rpm
Maximum torque	5.1 ft. lb./5,500 rpm
Compression ratio	9.5:1
Engine fuel	Gasoline 20:1 oil mixture
Carburetor	MIKUNI VM-20-SH3. (main jet #85)
Starting system	Kick system
Ignition system	KOKUSAN DENKI FA-87 flywheel magneto
Spark plug	N.G.K. B-7

TRANSMISSION

Type (pat. 495715)	4-speed foot operated with constant mesh
Driving system	Primary drive by helical gear
	Secondary drive by roller chain #420 or #41
	Secondary sprocket 15T
	Rear sprocket 32T or attached trail sprocket 46T
Gearbox Lubrication	Motor oil SAE. #30. (1¼ pints)

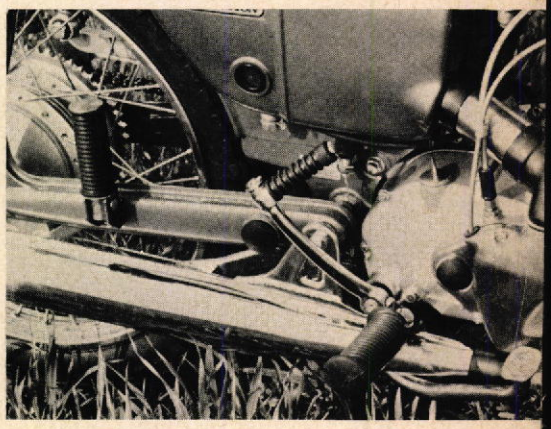
Reduction gear ratio	32T	46T
1 speed (low)	28.60	41.10
2 speed (2nd)	17.73	25.45
3 speed (3rd)	11.40	16.37
4 speed (top)	9.04	13.00

PERFORMANCE

Maximum speed	56 mph
Climbing ability	30°
Fuel consumption	155 MPG—level road—slow speed
Economic speed	31mph

DIMENSIONS

Length	71"
Width	33.3 inches
Height	49.4 inches
Wheel base	47 inches
Ground clearance	8 inches
Dry weight	155 pounds



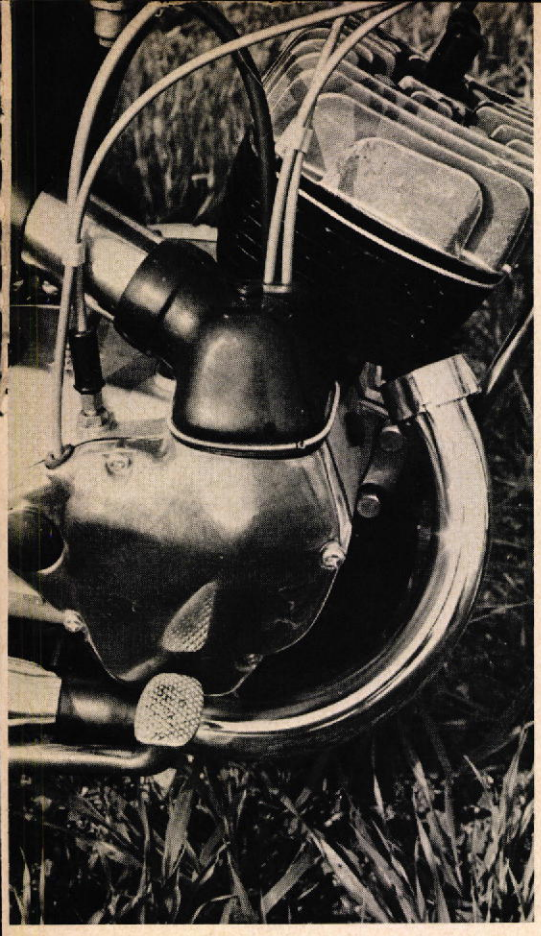
Oil Injection, Bridgestone style.

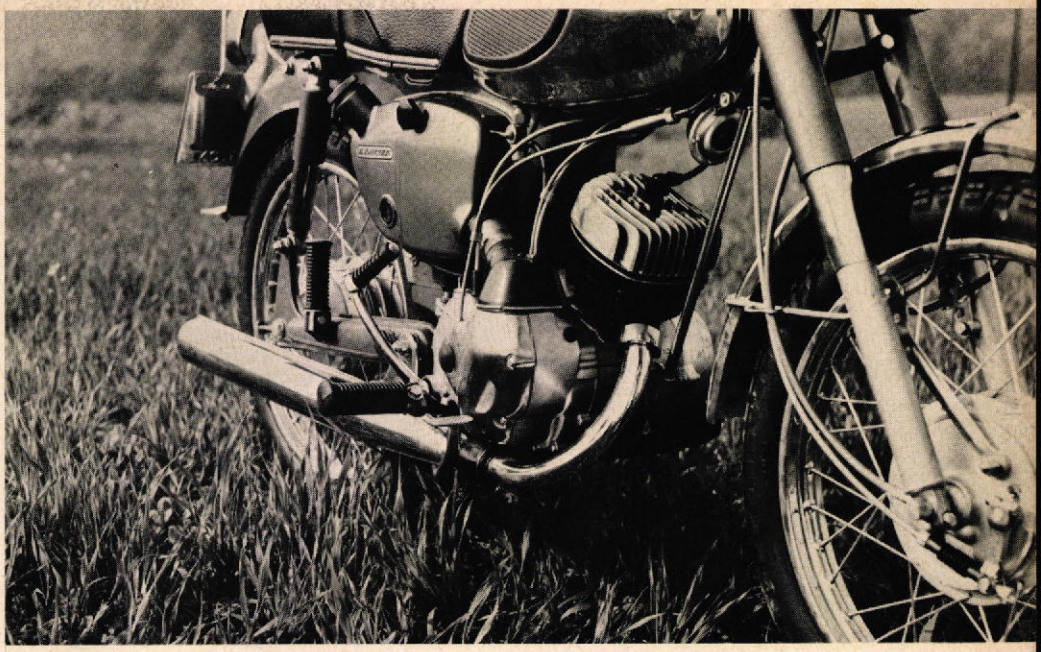
but for all round use are more than adequate. Hodaka does not provide a carrier for their trail gear so it's a matter of handcarrying the trail gear to the dirt and then putting it on. It would be nice if they put a sprocket carrier on the hub to simplify this operation. With the exception of these few faults we found the Hodaka to be one of the best bargains on the market.

BS is the emblem of our next test bike. It stands for one of the newer machines on the market, the Bridgestone. This machine is the perfect example of a manufacturer taking a street bike and attempting to convert it into a trail machine. With little ground clearance, small tires, small engine guard, flimsy luggage carrier, it is easy to see this bike was a street model first and a trail machine second. It's too bad that Bridgestone decided to go this way instead of building a bike from the ground up. With the engine they have, they could scoop the trail market if only a new machine had been designed. A rotary valve, one of the smoothest transmissions, oil injection and a background of building bikes that stay together combine to make this power plant one of the best going.

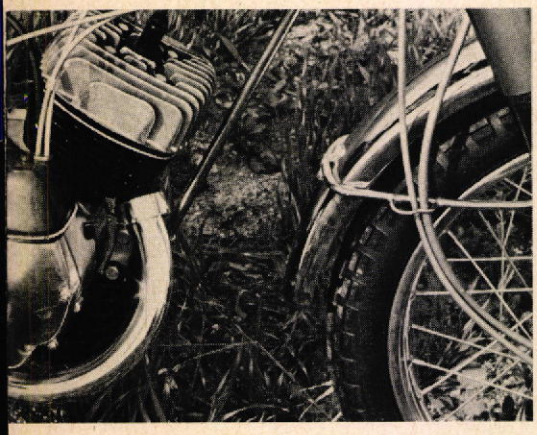
Bridgestone seems to be a progressive company in the motorcycle field and if they change their trail bike they would certainly capture their share of the market. This machine is good for weekend jaunts into the local hills and is more than adequate for street use. In fact it is a very good street machine with the exception of the tires. These and the upswept exhaust are the only provisions for trail use. It's too bad that they didn't adopt a spark arrestor so at least a rider would not be asked to leave the trails by the forest rangers.

However, things are not as bad as they may seem from what you just read. As we stated the engine is one of the better units around. The frame, while being of the pressed steel type, is very sturdy and rigid. The forks, (telescopic) give a smooth ride if not asked to leap big rocks (or tall buildings) in a single bound. The rear suspension adequately handles the demands put on it and Bridgestone does provide both a street and trail





Clean lines and polished metal highlight the Bridgestone 90.



sprocket. The lighting system, like all the Japanese machines, is the best available. Bridgestone is a growing company in this country and soon there will be dealers in all 50 states. With some changes, they could surprise the major manufacturers and steal more of the market than these companies would like to see.

Summing up this comparison test we would like to say that even though there are other trail bikes on the market, these seven will account for 95 percent of all trail machines sales in this country. They all have their good points and a few have some bad, but as a whole they represent the cream of the crop in the trail field.

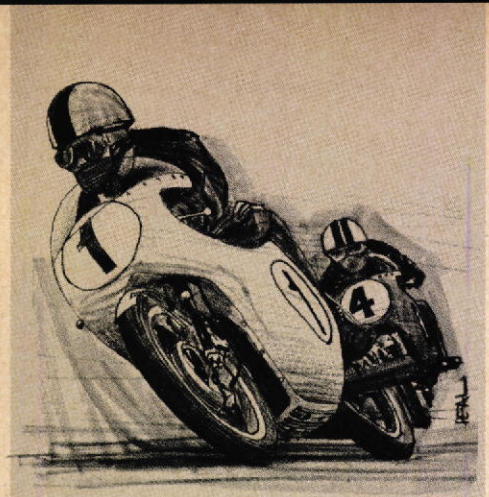
Trailing is one form of motorcycling that the whole family can take

Continued on page 81

E = EXCELLENT G = GOOD
VG = VERY GOOD F = FAIR
U = UNSUITABLE

	HONDA	SUZUKI 120	SUZUKI 80	YAMAHA	BULTACO	HODAKA	BRIDGE-STONE
TUBE FRAME	NO	NO	NO	NO	YES	YES	NO
TELESCOPIC FORKS	NO	YES	YES	YES	YES	YES	YES
ENGINE GUARD	YES	YES	YES	YES	YES	NO	MINI-MAL
SPARK ARRESTOR	YES	YES	YES	YES	NO	NO	NO
FOLDING FOOT-PEGS	YES	YES	YES	YES	YES	YES	YES
LUGGAGE RACK	YES	YES	YES	YES	NO	MINI-MAL	MINI-MAL
OIL INJECTION	FOUR CYCLE	YES	YES	YES	NO	NO	YES
LIGHTING	YES	YES	YES	YES	YES	YES	YES
UPSWEPT EXHAUST	YES	YES	YES	YES	YES	YES	YES
DUAL SPROCKETS	POSI-TORQUE	YES	YES	YES	NO	NO	YES

	HONDA	SUZUKI 120	SUZUKI 80	YAMAHA	BULTACO	HODAKA	BRIDGE-STONE
USABLE HORSEPOWER	G	VG	G	VG	G	VG	G
HANDLING	F	G	G	VG	E	VG	F
GROUND CLEARANCE	F	VG	F	E	E	VG	F
TIRE SIZE	E	G	G	E	VG	F	F
LIGHTING EQUIPMENT	E	E	E	E	G	E	E
FORK TRAVEL	F	F	F	VG	E	VG	F
BRAKES	E	E	E	E	VG	E	VG
SEAT COMFORT	G	VG	VG	G	VG	VG	G
TOOL KIT	VG	VG	VG	VG	F	G	VG
OVERALL AVERAGE	G	G-VG	G-VG	E	VG-E	VG-E	F



the competition scene

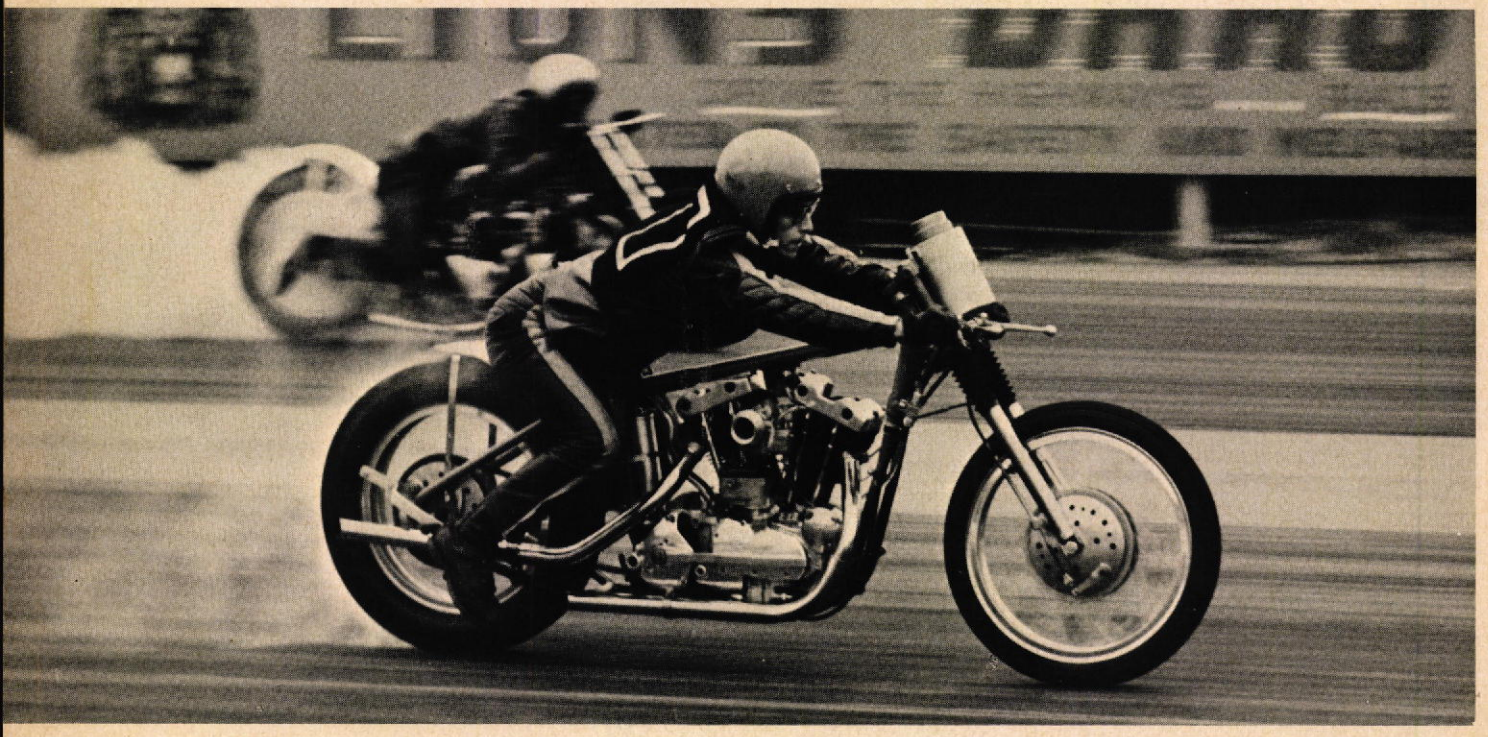
DRAGGING AROUND

by Bob Braverman

160 miles per hour!! For a long time now, several bikes have come close, but on Sunday, March 5th at Irwindale Raceway, Clem Johnson finally did the trick with a top end of 160.14. Just to prove it was no fluke, Clem turned around and went slightly over 159 mph. For those of you who haven't seen Clems 'Barn Job' run, let me tell you it's pretty unreal. He doesn't really get on it until he's well out of the chute. About half way down, the big Vincent starts to come on like it's shot out of a gun. Now that the 160 mark is a reality, who'll be the first to go 170?

Chances are you have read about what transpired at Las Vegas so I won't dwell on this now, but several things did happen worth mentioning. Leo Payne (and his fabulous Harley) came out for the meet and—you guessed it—won top fuel honors. He pulled this off by getting a good hole shot on the twin Triumph of Murray and Cook. Jim Cook was closing the gap very quickly, but alas, there wasn't enough time. Weatherwise it was ideal. Lots of warm sun with very little wind. The whole meet was run exceptionally well. Everything went off like clockwork which makes an event like this even more enjoyable. The only objection I had was that the bikes were run in e.t. brackets instead of classes. It kind of takes the incentive out of tuning for that last bit of performance. However, the promoters and Bob Ebling deserve a vote of thanks from all present for a job very well done. Because everything went off so well, they're talking about another meet in April at Las Vegas. I sure hope this comes to pass.

If a trophy for bad luck would be awarded, it would have to go to Perry and Scotty. This team has had noth-



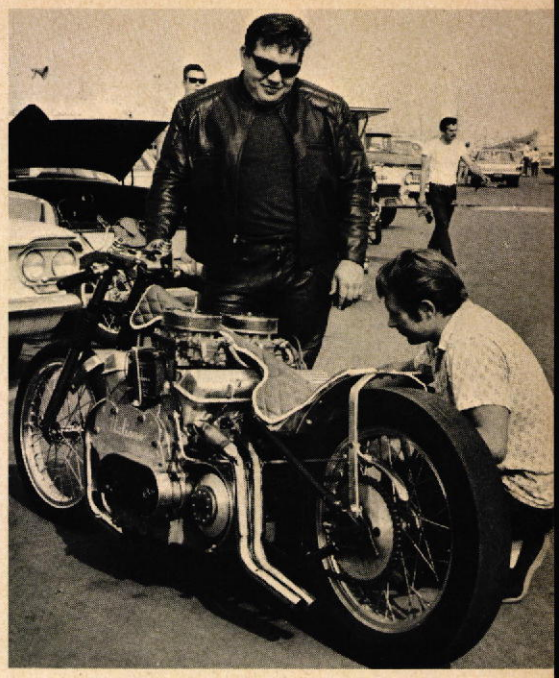
Sonny Raslawski's Harley is one of the machines to beat. This bike and rider are very consistant. Sonny slips the clutch out of the chute and then pours it on.

ing but one problem after another for the past year. When the bike runs, it runs strong, but unfortunately something always happens at the crucial moment. Last time out the rear engine threw a rod and the rear engine's performance dropped considerably, which is something of an understatement. Scotty's twin Triumph is certainly one of the lightest twin engine bikes around. It has an aluminum frame that shows hours of painstaking work. Both Perry and Scotty are real enthusiasts and a lesser man would have thrown in the towel a long time ago. However, these are things that you must face when running large percentages of Nitro.

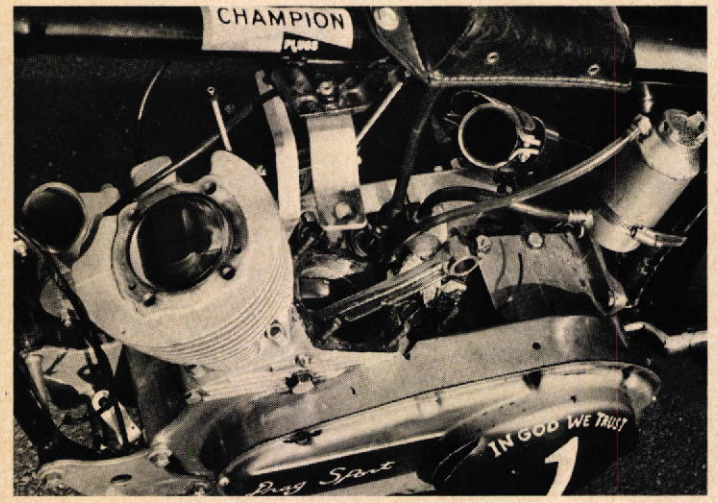
And speaking of problems—Leo Payne blew an engine last weekend which just goes to prove it can happen to anyone. He had to get out of it when the back wheel started around and the engine must have loaded up with fuel because when he opened the throttle again the engine went bang. An examination showed a broken piston and a bent rod. Fortunately, Leo brought a new spare engine with him from Iowa so he'll be out next weekend, rarin' to go again.

Leo's West Coast protege, Sonny Raslawski has been studying his lessons well. For the past six months Sonny has been going faster and faster and the last two weeks found him getting the bucks in top fuel. Sonny's Harley is very similar in appearance to Leo's, and from the way it looks the performance is about equal too. His e.t. last weekend was in the 9.80 region, and this is quick in anyones language.

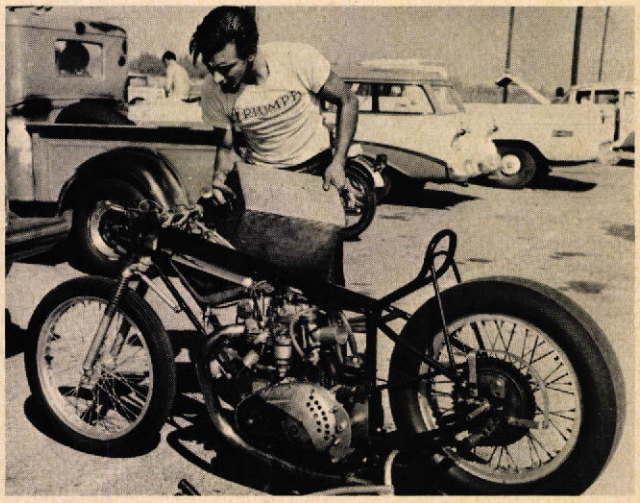
Suzuki and Yamaha are dominating the small bore classes, but I wonder how long it will be before someone puts forth some effort and builds up a Kawaski? The chances of success are pretty good since the potential is certainly there and all it would take is some industrious whittling. Steve and Vince Rowles have been



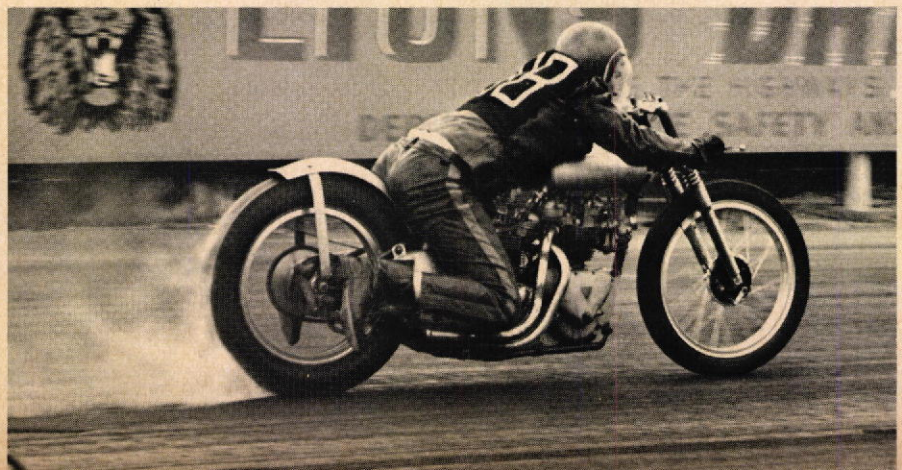
Teresi & Blair built this Buick powered bomb. Machine is set up for exhibition purposes. On gas it runs in the 130's. No gear box is used. Engine is an aluminum Buick.



Even the best of them let go once in a while. Leo Payne bent a rod and broke a piston last time out. Heavy loads of Nitro take their toll of even the best.



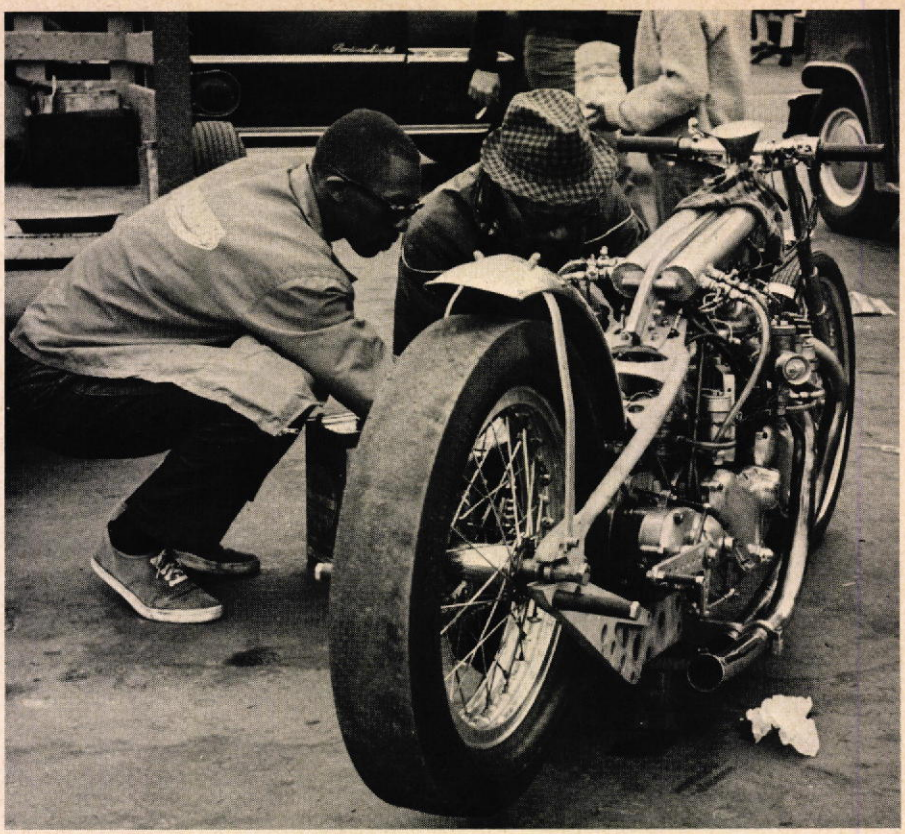
Jeff Gough put a late model unit construction engine (Triumph) in a Hagon frame. Bike is just over 200 pounds Jeff's fueler runs in the 10's.



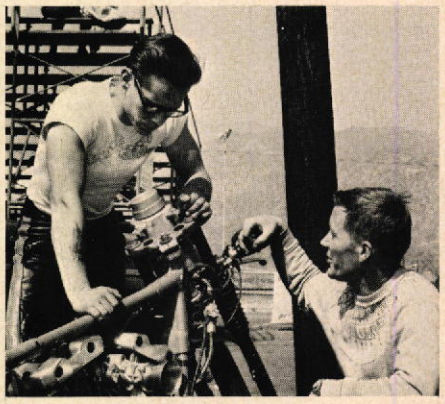
Pete Hutton's twin engine Triumph is still having teething problems. Pete runs in the 120 m.p.h. range consistantly on gas. Note the reversed head on the front engine.

running their 250 Suzuki in the 13.70's, and for a street bike this is flat flying. There are a goodly number of gas class dragsters that don't go any faster. Steve is putting together a gas dragster at the present time, so it shouldn't be long before he'll be as competitive in the dragster ranks as he has been in the street division. Right now Yamaha holds the upper hand in the smaller displacement dragsters at the present time, but with new engines appearing frequently, the picture may change. You never can tell what somebody is putting together in their garage or basement. This is the sort of thing that keeps everyone on their toes.

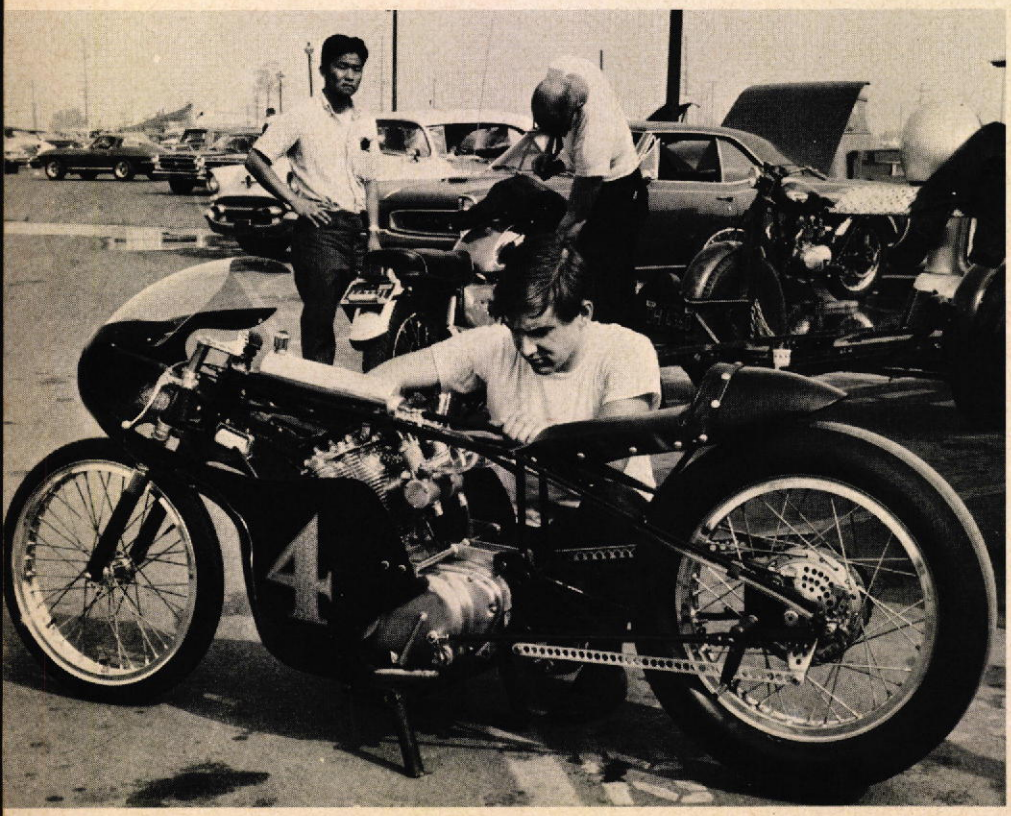
Next month, I'll have news of what's happening back East. In the past couple months I've received mail from quite a few riders east of the smog belt. If any of you would like to see your name in this column, drop me a line at 6906 Colbath, Van Nuys, California 91405. Cycle Guide has consented to give us drag racers at least two pages every month, so there's plenty of room for everyone. Just drop me a line and let me know what's happening. Also, if you have any good black and white (no color) shots you can send them along too.



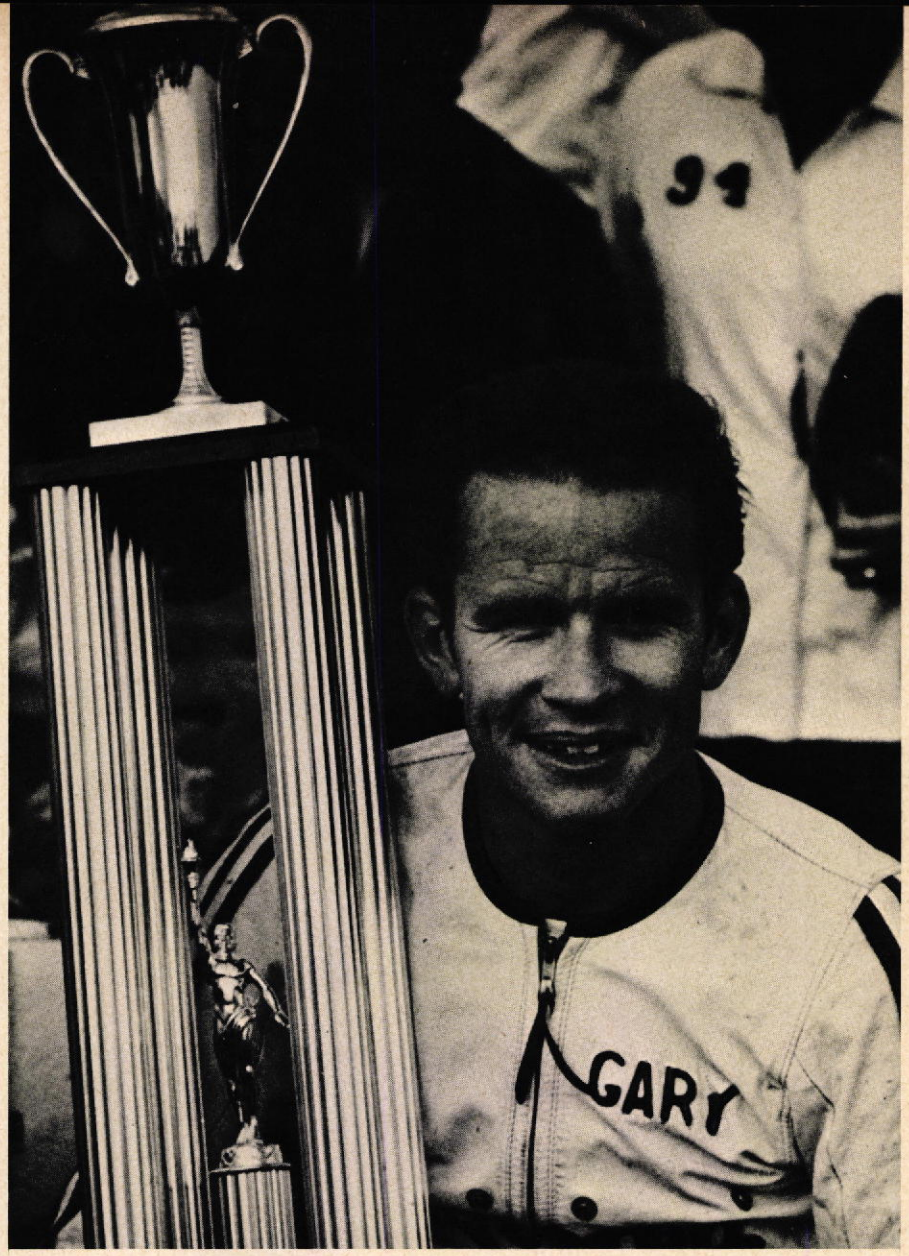
The hard luck twins. Perry & Scott have had more than their share of grief. Note the extensive use of aluminum in the frame. Perry (left does the riding.



Sonny Raslawski (left) has gotten a geat deal of good tuning info from Leo Payne (right). Both fellows run hard and fast. They're always a threat.



With bikes getting faster, streamlining is starting to get more than a passing glance from many competitors. A fairing will give you an additional few miles per hour at the top end.



Gary Nixon and his 200 Mile National Trophy. Nixon copped a double win by taking the 250 cc 100 Mile event, too.

Daytona '67 ROAD RACE MONOPOLY:

THE LARGEST motorcycle racing event in the world, the annual Daytona, Florida speed week, was topped off this year by sweeping wins for Yamaha in the various lightweight classes and a smashing victory for Triumph.

The American Motorcycle Association sanctioned event ran before larger crowds than ever before and there were well over 1,000 entries for all events that ranged from enduro races through swamplands, TT scrambles over natural terrain, beauty contests and racing for machines from 50cc on up to the famous 200 mile national championship.

There were many outstanding Firsts scored at this annual event that drew people from all over the world. For Yamaha there were four class victories, for Triumph it was their second straight win on the high banks in the big national event.

The Daytona week also found Honda 450's racing for the first time with strong advance preparations. The new Kawasaki brand was on hand to compete in American racing for the first time and fielded a factory team.

International flavor was added for the first time with the entry of Canadian Mike Duff who now makes his home in England and races the Grand Prix circuits around the world.

The new 350cc Yamaha was introduced into American competition for the first time and scored surprisingly well for a last minute effort.

These are just a few of the many first time and new innovations that were presented to the American racing minded public for the first time.

200 MILE NATIONAL

Ninety-seven riders came to the starting line and took positions earned from time trials held three days previous to the event. Each and every expert classed rider is required to race his machine once around the 2½ mile oval against the clock with the faster riders gaining the front row starting positions. Any rider who is unable to time trial automatically goes to the back rows come race day.

There was much pressure connected with the time trial events this year as Harley-Davidson had been working feverishly for months after being defeated a year ago.

Triumph had also made all out efforts and had factory engineers on hand to see that all went well for the Coventry brand. The same was true for BSA.

Two Hondas and two Yamahas were also getting into the act for the first time and many people from their factories were on hand for a first time look.

Previous to time trial day the weather had been perfect and somewhat on the hot side but Thursday, the day assigned to qualifying runs, it was windy and cold.

Riders were forced to run down the long speedway backstretch into the wind the entire distance. This is the only portion of the speedway oval that is perfectly flat in nature.

The vast majority of the veterans and members of the various factory teams chose to hang back and hope that the wind would subside. Many cast serious doubts that any new records would be set.

Things ran true to form the first two hours with comparatively slow times being turned in. The record set last year by Cal Rayborn on his H-D at just over 134 mph appeared to be safe for another year.

Then Gary Nixon and defending champ, Buddy Elmore came out back to back for their runs. Nixon was the first to break the old record with a 134:238 clocking. Seconds later it was announced that Elmore had topped his teammate with a one lap effort of 134:609!

A considerable time elapsed when Mert Lawwill, one of Harley-Davidson's top threats for the win, came to the line and upped the record to 135:074. It appeared as though H-D had regained the record.

Then it was long time favorite, George Roeder's turn on the well known Ralph Berndt tuned H-D. Roeder topped Lawwill and upped the time to 135:521!!

Back came Dick Hammer for Triumph and blazed the track for a one lap trip and took the record for the British brand to 135:746!!

Fans started leaving the track after that one—it appeared to be all over. Earlier in the day, dirt tracker Fred Nix and his H-D had taken a time trial run but a malfunction by the timing device had failed to record the time.

Nix was now to be the last man on the track and the wind had decreased by a considerable margin. Nix gunned his red factory backed and tuned 750cc twin to a smashing mark and new record for one lap at 140:823 mph!!!!! There was bedlam in the Milwaukee pits on Thursday night.

Former record holder, Rayborn, turned in a disappointing 129:870 mph average to set in the 15th fastest slot and pole in row three.

Race day found Nix, Hammer, Roeder, Lawwill and Elmore on the front row with Nixon on the inside of row two. All were over the old mark from 1966 and more than hopeful of a win over the 53 lap grind around the oval and through the infield course that measures 3:81 miles per lap.

From the start of the race, after the countdown from five minutes displayed on large cards from the starting tower, it was obvious that it was going to be a two rider duel.

Gary Nixon had proclaimed many times during the week that he was going to win the "200," a large boast for a rider that had never won this event before.

At the end of the first lap it was Dick Hammer in front with Nixon inches behind. Each lap paid $25.00 to the first rider across the line and this was the story for the first 100 miles with Hammer and Nixon swapping the lead back and forth but always Hammer the first to cross the line in all laps from one through lap 25. Nixon eased across first on the 19th round but it was Hammer picking up the chips the other 24 times.

No less than twenty-nine times these two American aces swapped the lead until Hammer pitted for gas at the end of lap 26. His pit stop was not by any means one of the fastest, or best in Daytona history.

Buddy Elmore, who had been running a solid third the first half of the race, took his gas stop on lap 28 and Hammer found himself 24 seconds back of Nixon, still in second.

The cocky redhead zoomed into the pits on lap 30, took on a full load of gas and was back on the track, seven seconds in front of Hammer with 23 laps left to run.

Hammer, the nine year veteran from Lakewood, Calif., then became over-eager and panic must have set in as he started lap 31. Prior to this lap he had not made a single mistake. The 31st round found Hammer overshooting the number one turn that takes a rider off the front straightaway and into the infield portion of the course. Hammer was about thirty

Start of the 26th annual running of the 200 mile event with Nixon (9) leading Hammer (16).

Nixon (9), on his way to the 250 cc class win aboard the new YDS-5 model Yamaha. Gary set a new record by averaging 94.094.

miles too fast.

His blue and white racer skidded and crashed hard with Hammer flying through the air in unfashionable style not fitting a potential winner. It was to be close to a minute and a half before he righted his machine and returned to action—hopelessly out of contention and with definite handling problems.

Elmore then took up the chase from his new second place position, Hammer was well back in 7th place.

Nixon held a 16 second lead over Elmore at the end of the 36th lap but all signals were 'Go' from the number 79 pit crew. And go the Texan did. By lap 46 he had narrowed the margin down to 9 seconds but then it was Nixon's turn to get the 'Go' signal.

The native of Oklahoma, now known as "The Baltimore Bullet," increased his effort and won by a 12 second margin at the end of the race.

The pace was to become so torrid for Nixon in his early lap duels with Hammer and his late lap bids to keep victory from Elmore that he shattered the old record of 96:582 and took it all the way up to 98:227 mph!! Nixon had led for a total of 29 laps, Hammer for 24 laps.

It was a crushing defeat for Harley-Davidson as Nixon and Elmore had lapped every rider in the field at least once, including third place George Roeder, the front finisher for the Milwaukee side valve followers.

It was also the second year in a row that Triumph riders had scored impressive wins over H-D and it was Triumph's third win in seven years at the speedway over Harley-Davidson.

Milwaukee had not lost two in a row to any other brand in the 200 miler since 1951 & '52 when they were turned back both years by the Norton singles and Dick Klamfoth.

Fred Nix, the fastest qualifier, came on strong after a slow early lap start, and climbed to 4th position by the 19th lap but was out of the race with a blown engine at the end of 23 rounds.

Cal Rayborn and three time winner Roger Reiman battled side by side until Reiman came up with a broken handlebar that dropped him out of contention.

Roeder came on strong in the late laps to bid for third place. He passed Lawwill for 4th on the 40th lap and Rayborn for third spot on lap no. 41. He was lapped by Nixon with less than five laps to go and Elmore added the salt to the wound by lapping the Ohio farmer on the last lap of the race.

The two Honda 450's entered and prepared by Team-Hansen in Racine, Wisconsin were the show-stoppers for other riders and fans alike. Nothing like them had ever before been seen in American racing and they were as potent as they looked.

These were the racing version of the double overhead cam street models introduced to the American public two years ago. Early practice laps and a late spill by third rider, amateur Jimmy Odom, proved that the Japanese tires were not the answer nor were the low mounted twin pipes that resembled dual cannons.

The Japanese tires were replaced with Goodyear rubber and the pipes were flattened on the outside to allow for the American style of riding that takes a rider into the sharper corners much faster and at much more of an angle.

Swede Savage, number one rider on the team, lost his tachometer on the second lap and then suffered complete loss of the rear brake the final 100 miles but again proved his road racing ability by finishing a strong 10th place.

His teammate, Larry Schafer, was not too far behind and finished in 12th place but did not turn in the ride displayed by Savage.

The two Yamaha 350cc entries, ridden by Canadian Mike Duff and Californian Tony Murphy, proved to be slightly slower than the bigger machines but ran all the way and both finished inside the top twenty places. Duff was plagued with pit stops but still finished right behind Murphy who was on the track for much longer periods of time.

Duff planted the Yamaha 350 in the middle of the second row in time trials with an amazing 132-plus mph effort. Both riders were four laps off the pace at the finish.

Many of the riders that rode the 200 were puzzled by Duff's riding style that found the Grand Prix rider setting straight up from time to time down the long back straightaway, looking around, and then resuming

the 'Tuck-In' position on more than one lap(?)

Magazine editor, Gordon Jennings, entered a highly modified Harley-Davidson that was dubbed the "Super Hog" in the pits during practice. Many near unbelievable reports had preceded this machine that was basically a 750cc engine in a Sprint frame. They all proved to be false and Jennings and his Jerry Branch innovation proved to be anything but a threat in time trails and the actual race. Gordon and "Super-Hog" finished in 57th place and only completed 23 laps before heading for the pits. Jennings timed in for 16th place at 129:720, far below all pre-race expectations.

Another big disappointment to many was the showing made by the BSA twins. They were a failure last year in a bid for a win by a bona fide racing team, with factory backing. This year they came to Daytona with one of the finest groups of racing talent possible and another year of preparation. Don Vesco placed the best of the team with a 49th place finish and lasted only 29 laps.

Best finish by a BSA went to Neil Keen on a private entry, he was on the 47th lap when the winner took the checkered flag.

In the winner's circle the winners, Nixon, Elmore and Roeder were all wearing Bell helmets, used Goodyear tires and Champion sparkplugs. Nixon and Elmore wore MACO leathers from Ernie Pico while Roeder was clad in red and black from the Bates Company.

THE LIGHTWEIGHT 100 MILE RACE:

The entry list totaled 150 riders in the combined amateur/expert lightweight race and once again it was necessary to run four heat races to scale down to the 80 fastest, taking the twenty best from each heat.

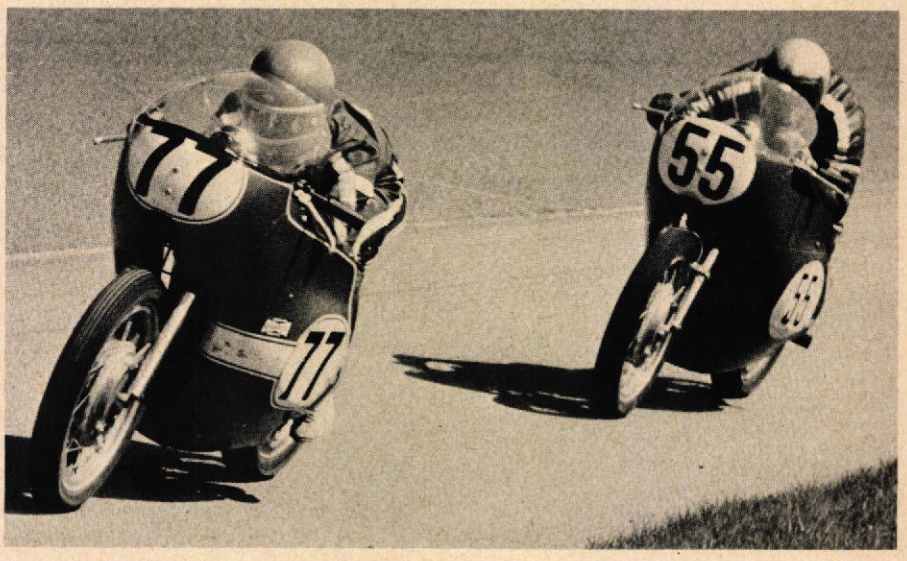
The heat races, as always, were hotly contested and a couple of red hot amateurs got the ball rolling in the opening five lapper with a runaway ride over some of the nation's ranking experts on team equipment.

Norm Stovall, Lubbock, Texas, Jim Varnes, Vincentown, N.J. and Bill Canfield, Albuquerque, N.M. ran away from H-D team Sprint riders, Chris Draayer, Roger Reiman and Mert Lawwill. Stovall and Varnes were on Yamahas with Canfield on a Suzuki. The average speed for the race by Stovall was 90:180 mph.

Pat Patrick gives last minute instructions to the 97 riders starting in the 200 miler.

End of the line in the Amateur 100 for fast timer, Jim Odom and his Honda 450. Odom fell while leading.

Second year expert, Chris Draayer (77) and three time Daytona winner, Roger Reiman (55) both H-D mounted; in close duel on front straight.



It was upset time again in the second heat with comparatively unknown riders again turning back nationally rated riders.

Amateur Frank Camillieri, Chelsea, Mass., and late entry Jim Anderson, Sherman, Texas were way out in front on their Yamahas when the flag dropped. Ron Grant, on a Suzuki, was the early leader until a wire came loose and he rolled to a near stop. Ron corrected the problem and came from last place to run a distant third. Far back were more team H-D riders, Cal Rayborn and Fred Nix. The average speed for this event was 92:072 mph.

The big boys started coming out in the third heat and it was a start-to-finish run for Yamaha team captain, Gary Nixon. He averaged 97:482 mph for the fastest heat race and was far ahead of '66 winner and teammate, Bobby Winters. Don Twigg, Hagerstown, Md. on another Yamaha was third. Last year's runnerup, John Buckner, now in the Army, was a distant fourth on a Yamaha with Canadian Yvon Duhamel in fifth. The only other team rider in this event was H-D amateur Walt Fulton Jr. He finished in 9th position.

The fourth and final heat race found Grand Prix rider, Mike Duff going to the line for his first race against the Americans. Duff made it a good one on his team Yamaha entry and defeated California amateur Art Bauman on a Kawasaki by a considerable margin. Yamaha team member Tony Murphy was a distant third as Duff scored his first AMA win. The average speed was 94:859 mph.

Then came the big one with the 80 fastest taking their proper positions on the line with the faster riders starting to the front. Way back in last place was Suzuki captain, Dick Hammer who had come up with carburetor problems in the heat race and was placed in the last row for the final.

Nixon, Duff and Winters were off like the wind from the start with Duff right on Nixon's rear wheel. Winters was just a few lengths back.

Duff took the lead away from Nixon

by less than two feet as the riders completed the third lap. It was still Duff in the lead at the end of the fourth lap, by about two lengths.

Nixon cranked on and regained the lead on lap five and started to stretch it out over Duff as they completed lap six. Murphy, who was running 8th, missed turn one, as the rider started lap six and dropped way back and out of contention.

Nixon really started pouring it on on lap seven and as the riders came down the front straightaway, Duff pulled to the pits from his second place position, and was out of the race.

Observers noted that on lap five Hammer had worked his way through the pack and was running in 9th place and closing fast on those still ahead of him.

By lap seven he was in fifth place and lap eight carried the former two time winner of this event to third spot behind Nixon and Winters.

From this point on the race was another of those torrid duels that have become an annual affair in the 100 mile 250cc race each year at the speedway.

Hammer chased Winters for second place and they were side by side as they crossed the line to complete lap sixteen. The Lakewood rider then took over second place on lap seventeen and was eight seconds back of Nixon going to lap eighteen.

The Suzuki rider started cutting one and two seconds a lap off the leading Yamaha until they crossed the line side by side at the end of lap twenty-one. Hammer took the lead from Nixon for the first time midway through lap 22 but Nixon took it back before they crossed the line to complete the lap.

These two fine all around riders then went on to swap the lead no less than eleven more times through the 25th lap. Hammer then dropped slightly off the pace with less than two laps to go and it was Nixon the first to take the checkered flag, with Hammer second and Winters a close third.

In Victory Lane it was discovered that Hammer's entire rear brake kit, lever, bracket, footpeg had broken loose on the 26th lap and forced the hard charger from California to ride the last six miles without a rear break of any type. It was still hanging by the cable and gained much interest from the more than 100 photographers that were on hand for the celebration.

It was another new record for Nixon and his Yamaha YDS-5 model that was being raced for the first time. The Baltimore redhead averaged a sizzling 94:090 mph, far and away breaking the record set in '66 by Winters at 91:876 mph.

It was a banner day for Yamaha. They had won all four of the heat races, set new track records in both the heat and final, taken seven out of the first ten places in the final and became the first brand to win the event three straight times!! The previous two years Yamaha had won eight of the ten top positions.

It was an amazing ride for Nixon and Hammer as the race was run in extreme high winds and extreme cold for Florida. Gary was chilled to the bone and it was to be many hours before he thawed out. Many fans were wondering what the record would have climbed to under normal conditions. The wind was blowing hard enough many times that it moved rider and machine one full lane on the high banked speedway.

THE NOVICE ROAD RACE:

Each year the cream of the new professionals and many strictly road racers who do not gain enough points to advance, meet in the annual 78 mile novice road race championship aboard the 250cc machines.

This race also requires four heat races to scale down to the 80 fastest riders that compete in the final. The heats were a near carbon copy of the experts with California's Dave Smith and New England's Leon Cromer crossing the finish line in the opener running end for end with Smith and his Yamaha in front. Cromer was on a Ducati.

The second heat found a mere five second lead for winner Terry Ernest, Yamaha, over Suzuki mounted Ron Muir. The third event was a seven second gap for H-D mounted, J. C. Klusmeyer over Doug Boiles on a Yamaha.

The last heat was another photo finish with Kenny Stephens on a Yamaha two lengths in front of Rusty

Bradley on another Yamaha.

In the final the lead was to change no less that TWENTY ONE TIMES during the twenty one laps and it was to be one of the outstanding races of the entire week.

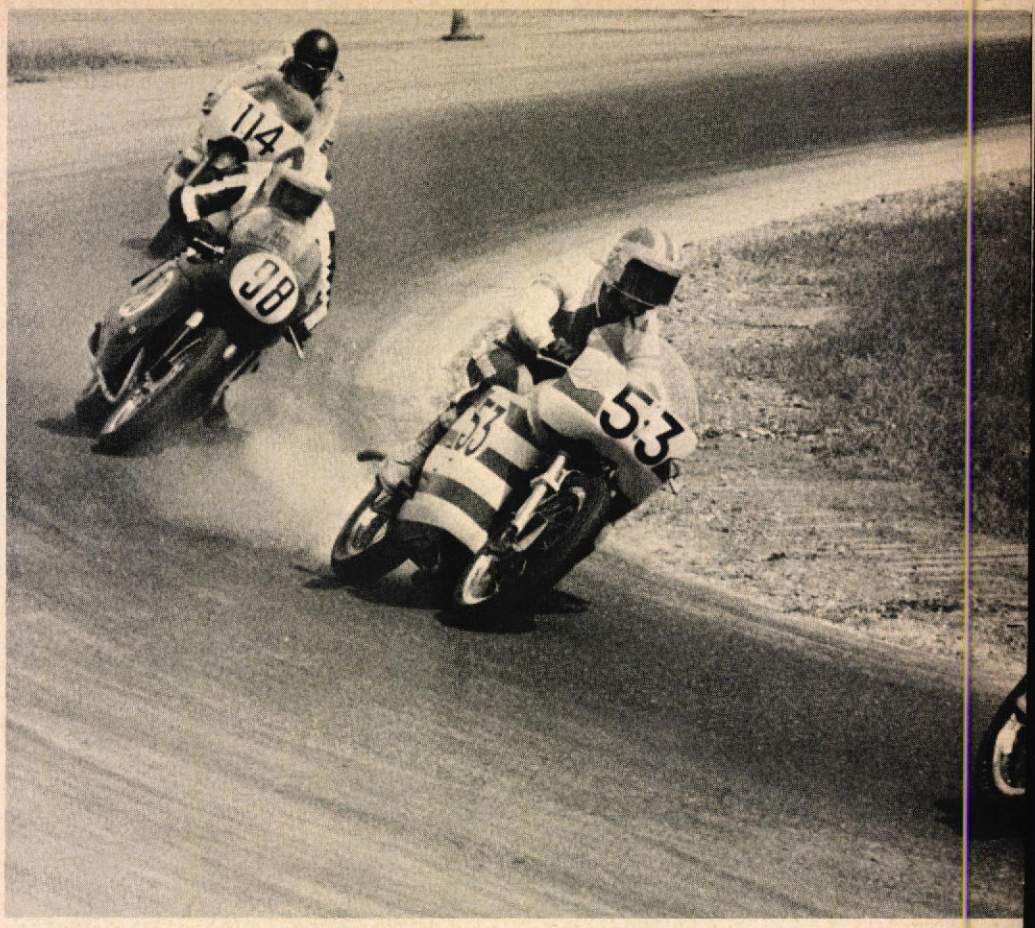
Muir led at the end of one, Italian ace, Sam Berteral led at the end of two, Stephens was in front as the field completed the third lap.

Laps four, five and six were near triple dead heat finishes with Stephens in front of Berteral and Muir. Berteral, who cannot speak English, dropped out and went to the pits on lap eight and the race was on the rest of the way between Stephens from Florida and Muir from Illinois.

At the end of ten laps, Stephens had built what looked like an impressive 10 second lead. Muir started moving on his self tuned and sponsored Suzuki and came from the back to take the lead as the riders completed lap 14.

The two then see-sawed the lead back and forth all the way to lap twenty when Stephens again took over as they crossed the line and then wrapped it up on the last lap to win with an average speed of 88:868 mph. It was not a new record.

The race for third ran right to the flag with Leon Cromer nipping Dave Smith by half a length!! Stephens and Muir are both third year novice riders who compete in road races only.



AMATEUR 100 MILE

Another outstanding event was the annual 100 mile big bike race for amateur riders.

For the first time in years, H-D had signed on an amateur to ride road races only. This was Walt Fulton Jr. who last year won the novice race in record time on a Suzuki.

To counter this, BSA came up with Art Bauman from San Francisco who has been gaining fame in many non-AMA road races on the West Coast in the northern area.

It was to be the first race for the new 450 Honda for Team—Hansen and Bob had pulled a surprise on all by selecting '66 novice TT champ and indoor ace, Jimmy Odom from Fremont, Calif.

Fulton and Bauman are both seasoned road racers who do not participate in dirt track events. Odom, who is rated as one of the best prospects in the nation this year, was going to be competing in his first road race ever!

In time trials, Odom pulled the upset of the week by placing the orange and white Honda on the pole, breaking the track record by over five mph and coming in close to six miles per hour ahead of the second fastest qualifier, Art Ninci, KC, Mo. Fulton was 4th fastest at 126:756. Odom took the record at 132:782.

Bauman came up with problems and did not take a time-clock run and had to line up in the back row.

It was discovered after time trials that Fulton had engine problems which resulted in the vast majority of the top H-D crew of mechanics from Milwaukee spending many hours getting the machine ready between late Thursday afternoon and starting time Friday afternoon.

Odom and the Honda shot to the lead with Fulton a close second on the first lap. The duel was on between these two fine West Coast youngsters. Odom is 18 years old, Fulton 19.

The two riders rode side by side, end for end and the lead changed back and forth on every lap until the midway point on lap eight when the two riders came back out of the infield portion of the course and back to the banked oval.

Odom was in the lead but lost his machine, pitching him high into the air and up to the wall.

Bauman had worked his way up to third by the end of lap five but could never close on Odom and Fulton to any more than 20 seconds—but he was a solid third.

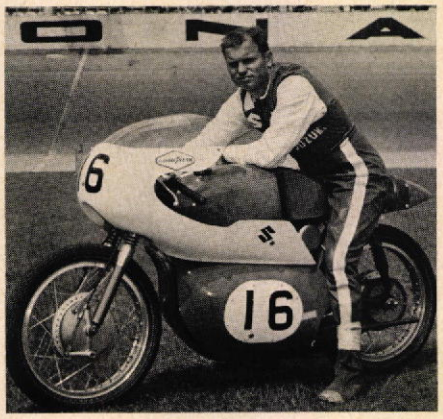
Prior to the crash by Odom, the three young Californians were making a runaway of the event that had a record 89 riders for '67.

Fulton took a commanding lead at the end of lap eight and was on his way to his second straight win—in record time. Bauman dropped out of the race on lap fourteen and Fulton found himself way out in front by close to a minute and a half.

A near miss came close to stopping young Walt who is the first rider in speedway history to win the novice and amateur events back to back. Late

Expert 200 Mile action coming off turn One. George Montgomery (83) on Triumph, leads H-D mounted Gerry Sequin (53), Bob Sholly's #98 Triumph and Dick Newell on Yamaha Number 114.

Dick Hammer on Number 16 Suzuki. Team captain and runner up in the one hundred miler.



in the race, coming through turn one, Walt fell off but was back up and in the race in record time. Many of the fans and officials missed the spill entirely.

Two separate races developed late in the event. A two rider duel went right down to the finish for second with Ron Widman, H-D edging Dick Woods, H-D by less than one length.

A three rider duel for fourth carried to the finish, a near triple dead heat finish with Triumph mounted Karl Beghtol inches ahead of Californian Dick Jennings on a Matchless.

Fulton kept the record parade going by smashing the '65 mark and taking the average speed all the way up to 94:018 mph!!

SIDELIGHTS

A full week of road racing is not enough to satisfy the tastes of racers and racing fans. In addition, there are also two nights of quarter mile dirt track racing at the local stadium. Ronnie Rall and his Sprint were the stars of the show on Friday night with Dick Mann on a Bultaco nipping Joe Pate on an H-D out of the final turn on Saturday night. There was a total of 200 entries for both nights of lightweight short tracking.

The entire week of road racing again played before a new record crowd and at both nights of short tracking from 500 to 1,000 fans were turned away when the stands became packed, an hour before the first race.

THE MEN THAT RIDE

In general, cycle racing has always been thought of as a young man's game. But in road racing the length of service appears to stretch longer than that of a dirt track racer.

Of the top twenty finishers, two were first year experts and one of these two is well into his 30's. A slim total of four of these front runners can be considered 'young' men. Two of them, Savage and Romero, have both been around for quite some time and neither is yet old enough to cast a vote.

Generally speaking, the race is made up of all-around riders that fans will see and read about later in the year that will be competing in various dirt track and TT events.

The purely road riders were; Mike Duff, Tony Murphy, Ron Grant, Warren Sherwood, Don Vesco, Gordon Jennings, John Buckner and Frank Scurria. Just about all, with the exception of the ageless Sherwood, are West Coast road racers who never compete in dirt track events. Of this group, and a credit to the all around riders and dirt trackers, the best finishes were turned in by Murphy and Duff, 18th & 19th places.

A wide variety of ages are also found down in the amateur and novice class at Daytona. One would expect these classes to slant toward youth, as they do in dirt events but it is not true at Daytona.

It is not uncommon to find novice and amateur riders over the 30 year old mark on the track with green or yellow number plates. There were again novices racing that have carried the green three, four and five years. The same in the amateur division.

One of the main reasons for this situation is the lack of road racing in America and the refusal of the AMA to change to overall point system that covers dirt tracking and road racing, alike.

Who are the winners this year? Kenny Stephens, winner of the novice event, has been road racing for five years in and around the Florida area that is a hotbed for sportsman road racing. (Sportsman events, under the AMA point system, do not award points for advancement in class.)

Amateur winner, Walt Fulton, Jr., is strictly a road race rider who is 19 years old and raced a big machine for the first time at Daytona. Young Walt raced 50cc machines in West Coast sportsman events prior to last season

when he moved up to 250cc machines and then won the Daytona novice race.

Gary Nixon is 26 years old and started professional racing in Oklahoma back in 1958. It took him until 1963 to win a national championship event.

Although Nixon is considered an all-around rider he still is anything but a threat on the TT tracks and would just as soon pass them up as ride them. He is a definite threat, however in any road race or short track event and a good mile track rider. He's a steady rider and usually a finalist at half mile nationals but has yet to win one.

Nixon is entering his 10th season as a professional rider and many followers feel that he is just hitting his peak stride that will carry him all the way to the Grand National title, as the AMA calls it, and carry the number one riding plate next season.

The percentage of "Dropouts" in professional racing is high. Of the hundreds of riders that take out novice licenses each year, only about 10 percent at the most, ever continue on and attain an expert rating.

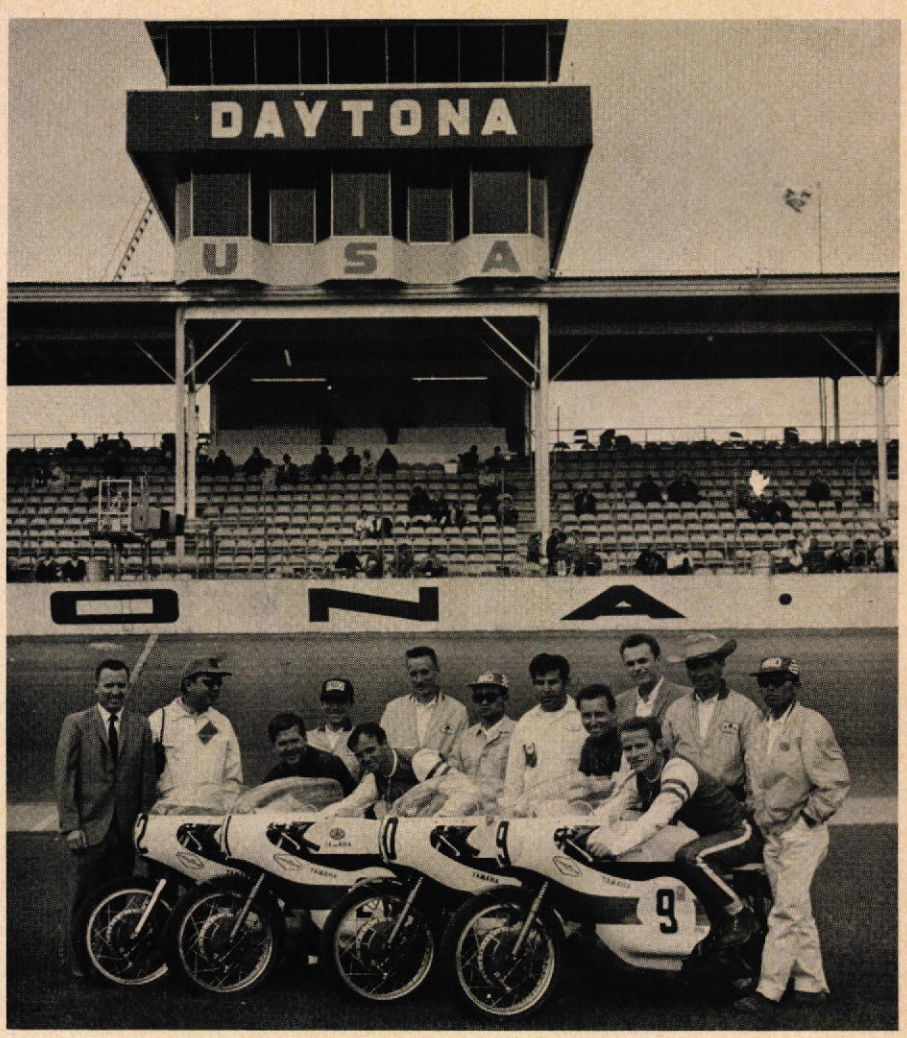
THE MACHINES:

In general, it was the same big three, Triumph, H-D and BSA locking horns again this year with an added boost from the Honda 450's.

While the Triumphs, especially those from the Baltimore nest, appear to be getting faster during the race, the BSAs and Harleys seem to remain constant in competition but faster than before in time trials.

A dozen riders were over the 130 mph mark in time trials for the expert class, eleven more than last year. Of these, Mert Lawwill, was the most consistent during the week of practice, running through the quarter mile time trap.

The official Yamaha team surrounded by their mechanics.



Triumph came to Daytona with much the same engine as last year and the 500cc job was more reliable and faster than ever for the chosen few with top mechanics.

Triumph has long been noted for fast machines, but not for the 200 mile grind. The 'Fast go and big blow' theory that plagued them for years appears to be over.

Baltimore tuners continue to swear that there are no exotic speed secrets incorporated into the engine. They just plain go fast due to loving care and careful preparation.

The Triumph team, however, does use upsweep pipes on their road racers to eliminate the chance of the machine 'hanging-up' on the turns.

Biggest eye-catcher at Daytona were the three new Honda 450 models entered by self-sponsor, Bob Hansen from Racine, Wisconsin.

Special carbs and a revamped frame were in order for all three machines and it was apparent that they were not as cumbersome as their street version counterpart. Special oil coolers were mounted into the fairing on each side.

The brakes appeared to be more than sufficient until race day. The rear brake faded badly and eventually became non-existent.

Hansen and Honda may have lost the amateur 100 mile race when he did not heed the idea to either raise, or flatten the two large exhaust pipes and trim the

Results of the 26th annual running of the 200-mile AMA National Championship EXPERT Road Race over the 3.81-Mile track-road course of the Daytona International Speedway, Sunday, March 19, 1967.

Pos.	No.	Rider and Home	Machine	Laps
1	9	Gary Nixon, Baltimore, Md.	Triumph	53
2	79	Buddy Elmore, El Paso, Texas	Triumph	53
3	94	George Roeder, Monroeville, Ohio	H-D	52
4	18	Mert Lawwill, San Francisco, Calif.	H-D	52
5	25	Calvin Rayborn, San Diego, Calif.	H-D	52
6	61	Wayne Cook, Richmond, Va.	H-D	52
7	16	Dick Hammer, Lakewood, Calif.	Triumph	52
8	3	Gene Romero, San Luis Obispo, Calif.	Triumph	51
9	5	Larry Palmgren, Freehold, N.J.	Triumph	51
10	74	Swede Savage, Los Angeles, Calif.	Honda	51
11	83	George Montgomery, Bladensburg, Md.	Triumph	50
12	6	Larry Schafer, Bladensburg, Md.	Honda	50
13	8	Bennie Bowden, Kalamazoo, Mich.	H-D	50
14	53	Gerald Seguin, San Pedro, Calif.	H-D	50
15	12	Eddie Mulder, Burbank, Calif.	Triumph	50
16	52	Ronnie Rall, Mansfield, Ohio	H-D	50
17	55	Roger Reiman, Kewanee, Ill.	H-D	50
18	112	Tony Murphy, West Covina, Calif.	Yamaha	49
19	10	Mike Duff, Toronto, Ont.	Yamaha	49
20	42	Warren Flickinger, Denver, Colo.	H-D	48

Results of the 250cc 100-Mile AMA National Championship race over the 3.81-Mile track road course of the Daytona International Speedway, Saturday, March 18, 1967.

Pos.	No.	Rider and Home	Machine
1	9	Gary Nixon, Baltimore, Md.	Yamaha
2	16	Dick Hammer, Lakewood, Calif.	Suzuki
3	21	Robert Winters, Ft. Smith, Ark.	Yamaha
4	114	Dick Newell, El Monte, Calif.	Yamaha
5	31	Donald Twigg, Hagerstown, Md.	Yamaha
6	190	Frank Camillieri, Chelsea, Mass.	Yamaha
7	81	Norman Stovall, Lubbock, Texas	Yamaha
8	26	Yvon Duhamel, Montreal, Quebec	Yamaha
9	161	Sonny Gager, Jacksonville, Fla.	Kawasaki
10	124	Don Butler, Woodridge, N.J.	Kawasaki
11	66	Ken Clark, Lomita, Calif.	Kawasaki
12	8	Bennie Bowden, Kalamazoo, Mich.	HD
13	63	James Varnes, Vincentown, N.J.	Yamaha
14	103	James Deehan, N. Hollywood, Calif.	Yamaha
15	93	W. T. Rufner, Fort Worth, Tex.	Yamaha
16	186	James Kersting, Winamac, Ind.	Kawasaki
17	182	Larry Stone, Deland, Fla.	HD
18	42	Warren Flickinger, Denver, Colo.	Kawasaki
19	106	Ray Little, Atlanta, Ga.	HD
20	118	Tom Hannum, Jr., Media, Pa.	HD

Average Speed: 94.094 New Record
Time of Race: 1 hour, 4 minutes, 45 seconds.

bottom of the fairings.

Railbirds report says that the Odom Honda was picking up the rear wheel on every turn through the infield, the problem that led to the eventual crash and withdrawal from the race.

This was corrected, pipes flattened, fairings trimmed, for the two expert 200 mile entries and the problem was eliminated.

Hansen the perfectionist did an amazing job in preparing these Hondas and proved that they are competitive in American road racing. A reader would have to see them to believe them. They may be at Laconia in June and Des Moines in August for the national meetings.

This brings us to the H-D 750cc side valve racers. The fairings were of much smaller design on the Milwaukee specials this year and a vast visual improvement over the 'Bath-Tub' type fairings used in the past.

H-D riders still continue to use a semi-dirt track handlebar and none of their aces use the accepted 'clip-on' type bar used by the other teams.

Harley has been working for a year on a new frame that would ease the ride through the turns at Daytona, or any other track. The jumping and skidding we saw on the corners makes it obvious that the total answer has yet to be found.

Very few H-D riders were mounted on new '67 models of the KR racer. Most outstanding on a new rig was amateur winner, Walt Fulton who was recently signed on by the factory and given a new 750cc KR and a new '67 Sprint 250cc.

The Yamaha official team of Gary Nixon, Mike Duff, Bobby Winters and Tony Murphy cast aside the now famous TD1-B engines that swept eight of the first ten places in '65 & '66 and switched to the new YDS-5 two stroke twin.

This is a five port engine that the Yamaha people claim is no faster than the TD1-B jobs, but they say it is more reliable in the longer races.

All top Yamaha tuners claim that the secret to the Yamaha 250cc engine is in the timing and the proper jets in the carburetors. The timing is watched by the team mechanics and checked after every practice session and race.

Even though very few riders had the new YDS-5 model, there were still many TD1-B machines on hand. They still proved to be some of the fastest on the track; backing up what the factory tuners said all along.

Many amateur riders using the older engines defeated a raft of top expert riders on other brands. Proof positive to the statement made by Yamaha.

Kenny Stevens, winner of the novice race, used a 1966 TD1-B Yamaha and appeared to have more steam on the long straightaways than any other rider. It was a new machine that had very little use, prior to the Daytona event.

A real racing twist came about concerning the new Kawasakis who were racing in national competition for the first time. There were four riders entered on the official team but only one, Buddy Elmore made it to the final and he finished in 78th position.

It appeared as though the 'out-of-the box' Kawasaki machines that were available from dealers fared far better as three of these

machines placed inside the first eleven positions with little known riders aboard.

The Kawasaki was the only dual rotary-valve engines in the 250cc race and the principle advantage is supposed to be a lower torque range and a more efficient running engine.

They did not live up to advanced expectations as to horsepower but many racing critics were more than pleased with what they saw in regards to the construction of the overall machine and feel that it will be a solid contender in the very near future.

Suzuki officially only entered two machines from the West Coast distributor with Dick Hammer and Ron Grant the riders. These machines are the 1966 X-6 models, the same that were introduced last year at Daytona.

The AMA rule requires that in professional racing only five speeds are used which resulted in the 6th shift again being blocked off.

There were also a few Ducatis on hand that never got into the race. They were entered by the distributor but were rejected by the AMA on the grounds that some of the items on the machine were not used on the production street models and that the parts in question had never been submitted for approval.

After an all week hassle involving the distributor, the AMA, and one national committee man who went way out on a limb and then had it sawed off in the local newspapers, the machines remained on the trailer. ■

Results of the 100-Mile AMA National Championship NOVICE Race, Saturday, March 18, 1967 over the 3.81-Mile track-road course of the Daytona International Speedway.

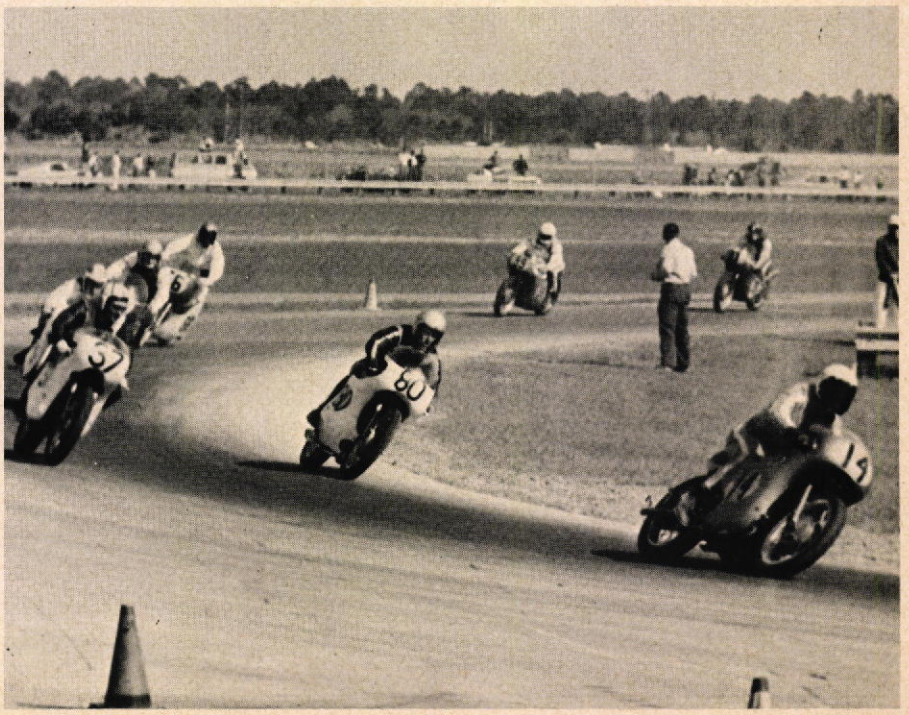
Pos.	*No.*	*Rider and Home*	*Machine*
1	77	Kenny Stephens, Sarasota, Fla.	Yamaha
2	111	Ronald Muir, Carbondale, Ill.	Suzuki
3	146	Leon Cromer, Springfield, Mass.	Ducati
4	22	Dave Smith, Lakewood, Calif.	Yamaha
5	13	Steve Pederson, Long Beach, Calif.	Kawasaki
6	43	Dennis Poneleit, Sarasota, Fla.	H-D
7	67	Duane McDaniels, Detroit Michigan	Yamaha
8	175	Donald Hollingsworth, St. Augustine, Fla.	H-D
9	52	John Cooper, No. Tonawanda, N.Y.	H-D
10	116	Donald Pesznecker, Portland, Ore.	Yamaha
11	160	Dan Clements, Battle Creek, Mich.	Kawasaki
12	44	Thomas Farley, Quincy, Mass.	Yamaha
13	38	William Crone, Jr., Massillion, Ohio	Yamaha
14	28	Steve Shenk, Muscatine, Iowa	Yamaha
15	180	Doug Boiles, Hollywood, Calif.	Yamaha
16	157	Ted Boody, Battle Creek, Mich.	Kawasaki
17	73	Joseph Laux, Appleton, Wisc.	Ducati
18	75	Noel Mathwig, Minneapolis, Minn.	H-D
19	57	Chris McIntire, Pittsburgh, Pa.	Yamaha
20	99	Francis Honeck, Ann Arbor, Mich.	Yamaha

Time of Race: 53 minutes, 8.09 seconds Speed: 88.868 mph.
Record set in 1966 by Walter Fulton on Suzuki at 89.122 mph.

Amateur 100 Mile Race Results

Pos.	*No.*	*Rider and Home*	*Machine*
1	66	Walter Fulton, Orange, Calif.	H-D
2	11	Ron Widman, St. Louis, Mo.	H-D
3	4	Dick Woods, Topeka, Kan.	H-D
4	5	Karl Beghtol, Bladensburg, Md.	Triumph
5	84	George Cunha, Johnston, R.I.	Triumph
6	99	Mike Sponseller, Timonium, Md.	BSA
7	90	Frank Camillieri, Chelsea, Mass.	Triumph
8	75	Lee Patterson, Fresno, Calif.	H-D
9	86	Arthur Ninci, Kansas City, Mo.	H-D
10	26	Ed Varnes, Parksburg, Pa.	BSA
11	40	Donald Fagan, Wheeling, W. Va.	H-D
12	69	George Russell, Baltimore, Md.	Triumph
13	72	James Anzalone, Arlington, Mass.	Triumph
14	31	David Franks, Grand Rapids, Mich.	Triumph
15	14	Robert Butler, Houma, La.	H-D
16	62	Kenneth Brunswick, Greenville, Ohio	Triumph
17	19	Tom Riley, Columbus, Ohio	H-D
18	48	Cecil Campbell, Ft. Pierce, Fla.	Triumph
19	30	Larry Dey, Des Moines, Iowa	Ducati
20	56	Larry Roberts, Indianapolis, Ind.	H-D

Time of Race: 1 Hour, 4 minutes, 49.08 seconds.
Average Speed for Winner: 94.010 (New Record)



More 100 Miler amateur action with Bob Butler of Houma, La., on a H-D, about to be passed by Art Bauman (80) BSA from San Francisco. Number 37 is '62 novice winner, Howard Utsey's Triumph.

Have You Seen Sport Cycle?

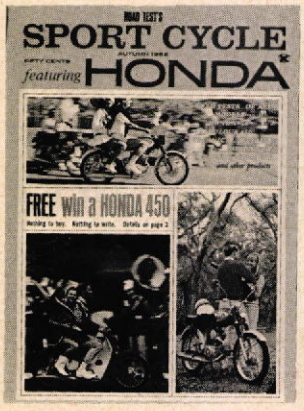
IF YOU HAVE A MOTORCYCLE OR ARE THINKING OF BUYING A MOTORCYCLE YOU NEED SPORT CYCLE!

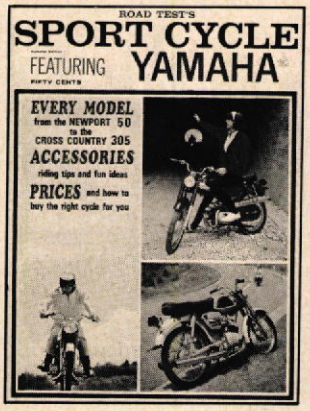
The most complete analyses of popular machines you can find. Big 64-page magazines devoted exclusively to one make.

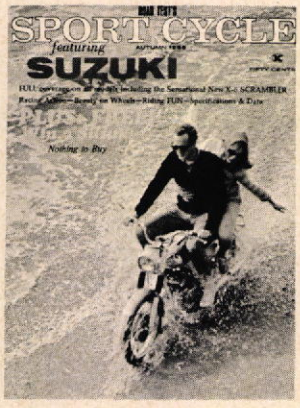
Read up on all the makes. Discover the features which appeal to you most. Small investment may save you big money!

***SPORT CYCLE Featuring BSA* NOW ON THE NEWSSTANDS**

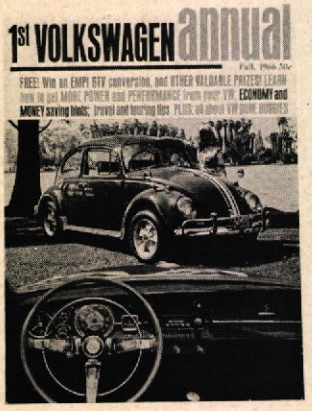
also at your BSA dealer or order directly from the publishers.







60c each; Any Three: $1.50; All Four $1.95 POSTPAID



ROAD TEST presents a complete coverage of this most popular import. Everything from *VW history* to engine *overhaul instructions*. Read about *DUNE BUGS, HOW TO TREAT YOUR VW, RALLYING & SLALOMS*, the new *G T V TOURING AND TRAVELING TIPS*. Read *"YOU WOULDN'T BELIEVE IT"* all of the fantastic things that have been done with Volkswagens and the famous VW engine.

order from ROAD TEST circulation dept.
P.O. Box 22253
Los Angeles, California 90022

SEND ME THE FOLLOWING SPORT CYCLE MAGAZINES

BSA ☐
HONDA ☐
YAMAHA ☐
SUZUKI ☐

60c EACH

3 FOR $1.50 4 FOR $1.95

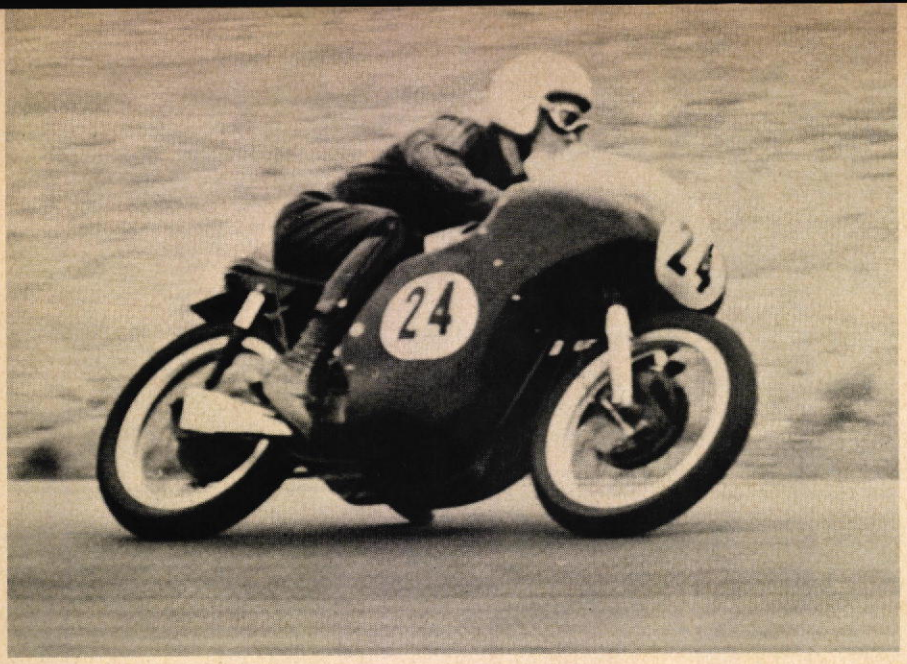
VOLKSWAGEN ANNUAL ☐ **60c separately 50c if ordered with any two others**

I enclose $_____ cash, check, M.O.

Name _____

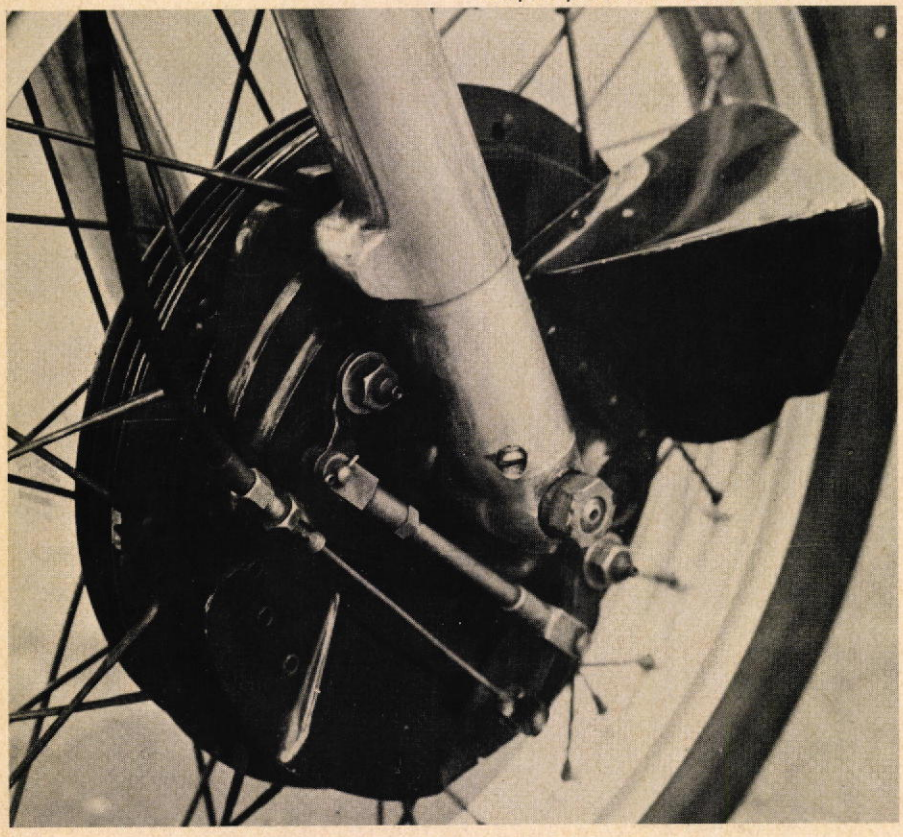
Address _____

City _____ *State* _____ *Zip* ____



Second gear and heading into turn #1.

To keep the brake cool a large scoop is pressed into service.



third, ease off for just a second, tap the brakes and lean into turn two. At this speed you feel every bump in the road, glance at the tachometer, 6500 revs. The back wheel slides, catches and slides again. Exit the turn at 6900. Down the short straight between two and three. 7200 revs and get fourth gear just for an instant, now hard on the brakes, down shift through third, second, into first around turn three and up the hill approaching four. Accelerating hard, lean into the corner and very gently shift into second. Around the top of the hill feathering the gas, now downhill shifting into third. Halfway down, gently lean to the right and get on the brakes for turn five. Back into second and on the gas with the rear wheel fighting for traction. Up the hill for turn six accelerating hard and NOW throw the bike into the turn and stay on the throttle. As you crest the hill, the bike gets light and you slide to the left hand side of the track. As you swallow your heart and charge down the back straight, shift into fourth, take a deep breath and try not to realize that you're going close to 130 mph. Almost without knowing you're through turn seven and approaching turn eight. This is where you'll be going some 130 mph, scraping the right footpeg on the ground. This is the corner which will prove or disprove all that has ever been said about the Manx's handling characteristics. Still flat on the gas tank you start in. The wind whistles by your one eye that has been stuck outside the fairing to let you see where you are going. Shrubs and small bushes come into your vision and are gone almost before you realize it. The Manx chatters a little as you hit some bumps but still holds the road rock steady. Slowly you swing to the outside of the track as you start to get a line for turn nine. Almost instantly you are in the middle of nine wondering what happened to that little straight I told you existed between eight and nine. Forget it. At this speed it's all one corner. Now, at the apex of nine, brake hard, back shift into third and literally jam the bike into the corner. It's very bumpy here and the tires struggle for a good bite. Now pick it back up and head up the front straight.

Even though it is 2.2 miles around, you have covered the lap in 1:45. The lap record is 1:43 and the extra 2 seconds means, instead of a nice fast ride, a panic stricken scramble to keep the bike on the race track. That was a lap around Willow Springs on a 500 cc Norton.

This is the story of the Norton Manx—old and obsolete, but under the right conditions still ready and able to add to its long and illustrious record. Whenever you are at a road race and a Manx rumbles by, I hope, as you look at the rapidly increasing distance between you and the machine, you realize this space is filled with decades of history. ■

KEEP YOUR COLLECTION COMPLETE!!

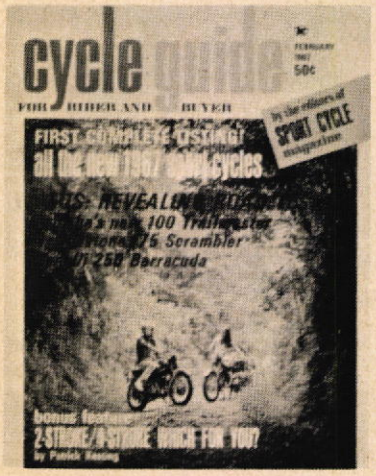
CYCLE GUIDE COLLECTOR'S COPIES STILL AVAILABLE

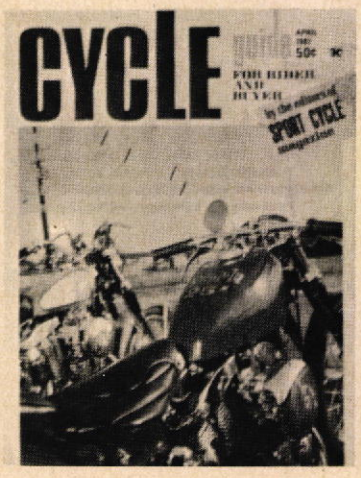
You will want a complete file of CYCLE GUIDE issues in order to have their wealth of information at hand. From practical essays to be found in Mike Capalite's TOOL BOX to detailed technical analyses by Bob Braverman and authoritative road tests by the CYCLE GUIDE staff, there is a veritable gold mine of cycling data. Don't be disappointed, order your back issues now.

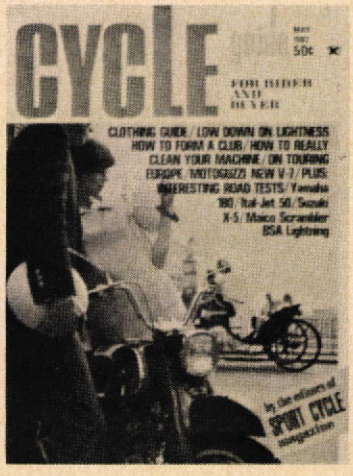
MARCH, 1967—contains a complete listing of the most popular cycles with prices and specifications; plus Two-stroke vs. Four-stroke, Which for You?; Yamaha's New Trailmaster; Bridgestone 175 Scrambler; Benelli Barracuda; Q. & A. and other regular features.

APRIL, 1967—features a complete guide to helmets, makes, models, prices; in addition to: Vital Facts on Camshafts; East German Juggernaut; Taking the Mystery out of Carburetion; Three Superb Custom Bikes; 8-Speed Simson test; Yamaha 100 Twin; Honda 160 Comparison; Royal Enfield; and, a host of columns.

MAY, 1967—Clothing Guide tells you what's new and practical, add on: How To Form A Club; On Touring Europe; 3-Wheeler for Two; Ital Jet; Maico Scrambler; Suzuki X-5; BSA Lightning and an exclusive analysis of the new Moto Guzzi V7 and you've really got a winner.






CYCLE
GUIDE
FOR RIDER AND BUYER
50¢
CLOTHING GUIDE / LOW DOWN ON LIGHTNESS
HOW TO FORM A CLUB / HOW TO REALLY
CLEAN YOUR MACHINE / ON TOURING
EUROPE / MOTOGUZZI NEW V-7 / PLUS:
INTERESTING ROAD TESTS / Yamaha
180 / Ital-Jet 50 / Suzuki
X-5 / Maico Scrambler
BSA Lightning
by the editors of SPORT CYCLE magazine

Use the handy coupon.

Cycle Guide, P. O. Box 22253, Los Angeles, California 90022

Please send me the following back issues at 60c each, postpaid.

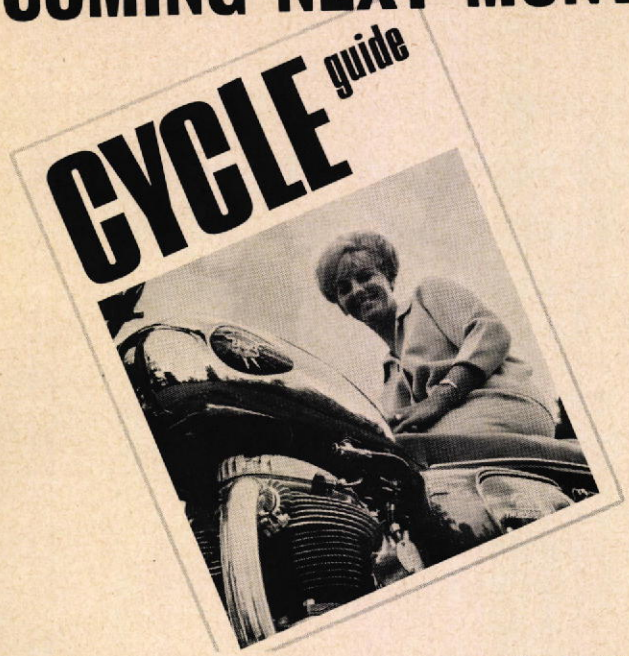
Vol. I, No. 1 ☐ Vol. I, No. 2 ☐ Vol. II, No. 2 ☐ I enclose $ _____

Name _____

Address _____

City _____ State _____ Zip _____

COMING NEXT MONTH



NEXT MONTH'S ISSUE INCLUDES THESE FEATURES—DON'T MISS CYCLE GUIDE—ON YOUR NEWS-STAND JUNE 13.

THE CR-93 HONDA
Honda's answer to production racing. Bob Braverman analyzes one of the best production racers to hit the track.

ROAD RACING SCHOOL
From both points of view, the instructor and the student.

BUILD A CHOPPER, PART ONE
Step by step instruction on building a winning custom.

'66 MOTO-CROSS CHAMPIONS
Profiles of the top riders on the championship trail.

QUEBEC TO LOS ANGELES
The diary of a Yamaha 100 owner who wanted to sample the California surf.

TEACH A CHICK TO RIDE
Fun and frustration in one easy lesson.

PLUS REVEALING ROADS TESTS ON:
Kawasaki 650, Yamaha 350, Bultaco Pursang, and Yamaha's Daytona Terror, the YDS-5 Road Racer.

DISCOTECH
Continued

fix the anvil to the main, movable brake biscuit housing. Since braking force only tends to move the caliper more tightly against the swing arm tube where it already rests, the mount has little exertion to hold the unit in place. Location, unlike the Rickman rear unit which hangs exposed under the arm, is out of harm's way from rocks which might be traveresed.

The master cylinder is mounted above the brake pedal on a well-lightened bracket of 3/16-inch aluminum. Tight against the frame tube, triangulated mounting used existing bolts for the brake pedal pivot and exhaust pipe support. A short aircraft clevis threads into a rotating connector on the master cylinder arm and adjustment for the amount of pedal movement or "free play" prior to brake engagement is made here. It was found that lengthening the stock Metisse brake pedal on the cylinder side by one inch gave proper toe-travel for full engagement without too rapid or grabby action. An additional mounting hole in the master cylinder arm provides a variation in sensitivity.

Just how good is it? The disc is deceptive because of its smooth action. It will stop the bike quickly, but without the grab and tendency to lock up experienced with drum brakes. When braking on washboard surfaces such as those encountered at the bottom of a dirt hill or just before a tight turn, it doesn't chatter in the manner of a drum brake which tends to kick the shoes back against pedal pressure. Riding and braking through this stuff is a revelation that indicates the disc is vastly superior. In the rain and snow of a test ride it stood its ground with little loss of efficiency. Summer heat has yet to be met and conquered but it can do it.

It seems that if easy installation kits were available it might be worthwhile to 'slip a disc' on your bike. ■

TOURING EUROPE

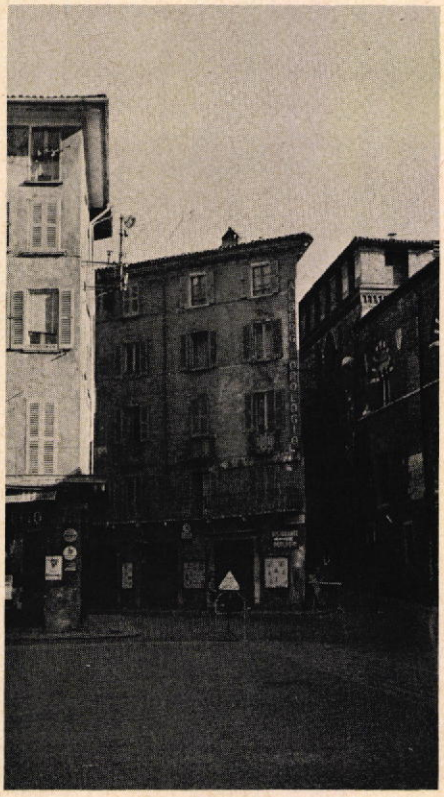
Continued

ception. The people are quite friendly and fiercely proud of their country and its traditions. There is but one disturbing habit. Everyone keeps a pot beneath the bed at night for emergencies and in the morning dump it out the window onto the street. Then they wash down the houses, streets, etc. Rule Number One: don't drive through towns in the early morning hours. Buy breakfast and fix your own lunch and dinner.

Generally speaking, European traffic is bad only in the large cities. The Autocourse (France), Autobahn (Germany) and Autostrada (Italy) can't be considered heavily traveled by freeway standards. However, the fact remains that there are more accidents in Europe per 100,000 cars, than in the U.S.A. The rule is to drive to the right and pass to the left, except of course, in countries where driving on the left such as England, Denmark and Sweden. Never, but never pass a European on the inside as it makes them absolutely furious. The rule of the right is basic law and simply stated: someone coming from your right owns the road. Speed limits in Europe are posted in kilometers per hour, so a 60 zone means 37 mph. Unless posted, there is no speed limit and on the Autocourse, Autostrada and Autobahn, he who has the fastest machine holds the deed to the center lane, but you must yield to overtaking vehicles immediately. Not to do so, is unthinkable and at the speeds Mercedes, Ferraris and BMWs travel is a certain invitation to disaster. At night, an overtaking vehicle will rapidly flash the headlights from dim to bright (the blinking lights of death) if overtaking. If you goof and the local police haul you over, be prepared to pay your fine on the spot. Also, don't be the least bit surprised if you round a bend at high speed and find a VW, Fiat or Renault in the road with both doors open and the occupants lounging on the roadside having lunch.

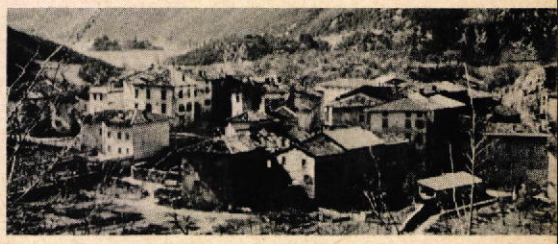
Don't worry about the food, just eat it and enjoy it. Oh yes . . . on touring Europe: have a good time and don't try to impress anyone. ■

Paris is best observed from atop the Eiffel Tower (984 feet high).



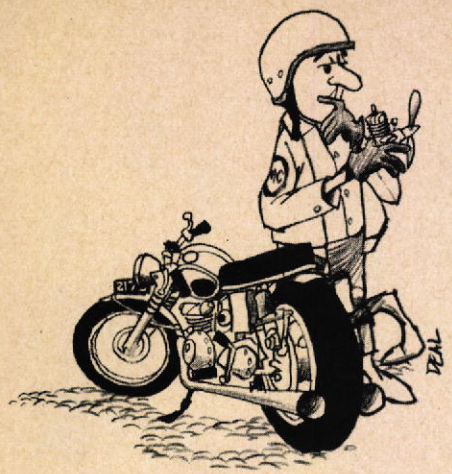
Scenes like this one are typical of Central and Southern Italy, but so are cobblestones.

There is nothing that identifies the Netherlands like a Dutch windmill or a pair of wooden shoes.



Some of the towns in Southern Italy seem to lack that well-cared-for look.

Except for Cannes, the beaches on the Riviera look about like this; loaded with round rocks.



q and a

Q. Lately, I've been having a great deal of trouble with the generator overcharging on my 1960 Triumph. Also the gears grind when I put the gear box in low. I have been back to the dealer several times with both problems, but so far no success.

A. *Overcharging can be helped by running a wire from the green/white rectifier terminal to the #7 switch terminal. This reduces the output of the generator when running without lights. If too little charge is reaching the battery, then install a toggle switch that you can turn on and off at will. This is the cheap way out, but it works. The clutch problem you describe is not unusual. Start by removing the complete clutch plate assembly. Check all the stal plates on a flat surface to check for warpage. Slightly warped plates can sometimes be straightened, but it's best to replace them. When reinstalling the clutch plates, take your time and be absolutely certain to adjust each spring individually so as to get the most even release of the outer plate when the clutch is disengaged. Once this is done, adjust the lever screw to allow 1/16 or 3/32 free slack at the end of the lever. This should help clear up clutch drag considerably.*

Q. I have a 1965 CB160 with over 8500 miles on it. This engine was recently bored out to 175cc using one of the popular 'big bore kits' currently on the market. The valves were also replaced. The carbs still have the standard 90 main jets and I am using an AC 122F set of spark plugs. After warming the engine for five minutes and driving about a mile at 35 mph, the engine momentarily seizes. The engine then will not restart until the engine has cooled for quite some time and then it is still tight. I am using Kendall GT-1 10-W-20 racing oil. Do you have any ideas what could be wrong? The spark plugs are both covered with black soot indicating the carbs are set rich which I believe will not need to have the main jets increased.

MICHAEL E. SANDERSON
West Lafayette, Indiana

A. *It sounds as though your pistons are fitted too tight. The clearance should be between .0015 and .002 (inches). While Kendall may produce a good product to use on the race track, this lubricant is not the best for street use. Many riders use a racing oil on the road, and this hastens wear in many cases. What I would recommend doing is to flush out the engine thoroughly (there are flushing solvents available from the local parts house) and replace the oil with a good grade of petroleum oil. Chances are that you'll find the pistons scuffed due to the seizing, and a new set may be needed. If the cylinders are also scuffed, a hone can clean them up. Be sure to use new rings. The sooty spark plugs indicate either an over rich carburetor condition or too cold a plug.*

Q. How can I tell if the chain is worn out on my Yamaha YD-S2? I have over 30,000 miles on the bike and lately have broken the chain twice.

A. *Breaking a chain twice in a short time is a good indication that the chain is getting tired. Check for wear by grasping the chain with your thumb and forefinger about half way around the rear sprocket. If you can pull the chain more than ½ the height of the sprocket tooth, the chain should be replaced. Also, the sprockets should be inspected too. With the many miles on the machine, the sprockets are probably pretty worn too and should be replaced.*

Q. I would like to get more power out of my BSA Super Rocket, and my local dealer has sold me on the idea of installing a #67-358 cam which he claims will give me a lot more power. One of my friends says this is too wild a cam for the street. Before I undertake this work, I would like to be sure I'm installing the right parts.

A. *Your friend is right. The #358 is a very radical cam, and while it will produce an appreciable amount of power, you will sacrifice good low speed performance. A much better choice would be the #357 which will give you additional power without sacrificing over all engine performance.*

Q. At the present time, I'm overhauling my Villers engine, but I cannot get the cases apart. I have removed all the bolts, but it seems as though they are frozen together.

A. *On Villers engines, the ball bearings are a tight fit on the crankshaft and also inside the crankcase. The best way to solve your problem is by heating the case up and gently tapping either end of the crankshaft. In many cases boiling water is sufficient to do the job of loosening the outer ball races from the case and permitting easy removal of the crankcase half.*

Q. Are rim locks necessary on a street bike? I have two of these on my bike and they make it very difficult to change tires or fix a flat. I've noticed not all bikes have these.

A. *Rim locks are installed to prevent the tire and tube from turning on the rim. This is very desirable on a competition machine, but providing you watch your tire pressure you can eliminate the locks. If the locks are removed, and the tire pressure should drop then the tire and tube will rotate on the rim and the valve stem will be torn out.* ◆

Do you have any unanswered questions about your motorcycle? If you do, send them to our Q and A column and we'll do our best to answer them. Send all questions to: Q and A, Cycle Guide Publications, Inc., 6675 East 26th Street, Los Angeles, California. 90022

EDITOR'S DESK
Continued

tally, all Portland police riding in squad cars now ARE required to wear helmets and they are complaining long and loud about it.)"

"Then, helmets have certain real handicaps for motorcyclists. Most of them cut down your hearing a bit and our local police say they interfere with their field of vision also. Since I ride bare-headed most of the time I'd certainly hate to think of wearing a helmet in hot weather. Then what is one to do with his helmet when he leaves his bike by the roadside while he takes, say, a hike in the hills? (As I often do). Obviously it is a nuisance to carry it with him and if he leaves it with his machine it may or may not be there when he returns."

"If I were doing any long distance, high speed riding these days I suppose I might use a helmet myself, but for the mild type of riding I do now a helmet would be just a plain nuisance. And if we ever have a compulsory helmet law in Oregon I'm afraid that will be when I quit motorcycles. Certainly there is a slight risk in going without one, but we all—and I mean everybody, not just motorcyclists—take these calculated risks every minute of our lives and it would be plain stupid to try to avoid them all. (As I sit here at my typewriter I may be in mortal danger for all I know. One of these military planes flying overhead might come thru the roof at any instant. It has happened before, you know.) Anyway, in the 57 years that I have been riding motorcycles—since 1910—as well as driving cars, I have had only one head injury, and this was on the race track, where I was, of course, wearing a helmet. Other than this I have never worn a helmet and I've never had a head injury, either."

"As I see things, now, at a time when the federal government is busy whittling away at our individual liberties, one by one, we ought to all protest most vociferously against any unnecessary encroachment in our purely personal affairs. I'm not against helmets for younger and more inexperienced riders —in fact I'd recommend them—but I hold that it should be on a strictly voluntary basis."

Our exact words in the Helmet Guide article were, "There isn't any doubt that all motorists will have to wear protective headgear in the not too distant future.

"This isn't a bad idea. Statistics show that two-thirds to three-fourths of the deaths in cycle accidents are traceable to head injuries —injuries which a helmet would prevent or lessen substantially."

Our reasoning is based on the proliferating state legislation with mandatory helmet provisions. We (the staff) agree that such laws are an invasion of privacy and completely at odds with John Stuart Mill's principles of democracy which we as a government, presumably follow. (ie: laws should only be made to regulate actions which cause harm to others). But, there are lots of other laws which breach the democratic tradition and they have been passed because a majority so decided . . . and we can't hold out much hope that this type of legislation will be defeated.

We don't advocate compulsory wearing of helmets. We merely feel that it is good sense to use any available means to lessen the possibilities of trouble. And we know that a certain percentage of riders will always wear helmets; another group will wear them at times and still others will scorn headgear . . . for reasons of comfort or convenience.

It is the same with seatbelts in automobiles. I, personally, buckle mine up to just drive the car in the garage. My partner ignores his most of the time. Neither of us have been hurt in an accident, so far, . . . but since Fate is the hunter, who can say what risks we run.

Mr. Cunningham is a reasonable man and experienced. His judgment as to his personal safety is certainly as good as that of some legislator who reads the headlines and decides to take action to protect people against their own recklessness. But, unless the trend is reversed he will soon have no option.

In the meantime, we rather regard the "I'll take my chances" attitude as being quite like the guy who says, "I'll buckle up my seat belt just before the crash." Wear your helmet at every opportunity. Even in your car!

TRAIL BIKES

part in. The machines are not too expensive, the upkeep is minor and the fun comes in bushel baskets. Some people complain that the trail machine is not fast enough to provide the thrills that they are looking for in the hills, but one should remember that speed is relative and if all the riders are on small machines it's just as much fun as the 40 inchers.

If you haven't tried this fun world of the trail machine, we suggest that at your earliest convenience you give it a try. Then, when we meet in the hills you can try to convince us that what we said about your brand was not true, that your machine is the best in the whole damn world. ■

BRIDGESTONE 90

ENGINE FEATURES

Engine	Rotary valve 2 stroke, air-cooled, single cylinder
Displacement	88cc
Bore & Stroke	1.97×1.77 inches
Clutch	Wet Multiple Disc
Transmission	4 Speed, Constant Mesh, Rotary
Compression ratio	6.8:1
Horsepower	7.8 at 7,000 rpm
Maximum torque	0.85 KG-M at 5,000 rpm
Ignition	Magneto
Starting	Kick
Electrical system	6 Volt

PERFORMANCE

Maximum Speed	
60 mph with 34T sprocket	
45 mph with 47T sprocket	
Minimum turn radius	5.9'
Fuel capacity	1.85 gallons

DIMENSIONS & WEIGHT

Length	72.0 inches
Width	22.8 inches
Saddle height	29.5 inches
Wheelbase	45.7 inches
Dry weight	178 lbs.

SUSPENSION

Telescopic front fork	Oil dampened
Rear swing arm	Oil dampened
Engine stabilizer bar	

Colorful Action

For colorful action you can't beat CYCLE GUIDE! The latest in competition news; authentic, revealing road tests; riding tips; performance hints; informative technical material in an easy-to-read and understandable style. If you dig cycles, you'll dig CYCLE GUIDE. On sale at your favorite newsstand every month. Or, to be sure not to miss a single exciting issue, subscribe today. Fill out the coupon below, take advantage of the special introductory offer and save a dollar!

CYCLE GUIDE

SUBSCRIBE NOW

SPECIAL INTRODUCTORY OFFER
For New Subscribers Only
12 issues (One Year)
ONLY $4.00

Send me CYCLE GUIDE
for 1 year (12 issues) for only $4.00*
on your special introductory offer. Payment is enclosed.
** In U.S. and Military Post Offices. Other countries add $1.00 postage.*

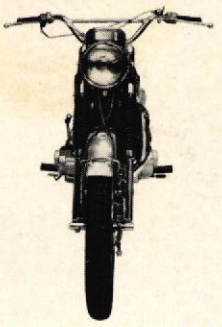
Name _____

Address _____

City _____ State _____ Zip _____

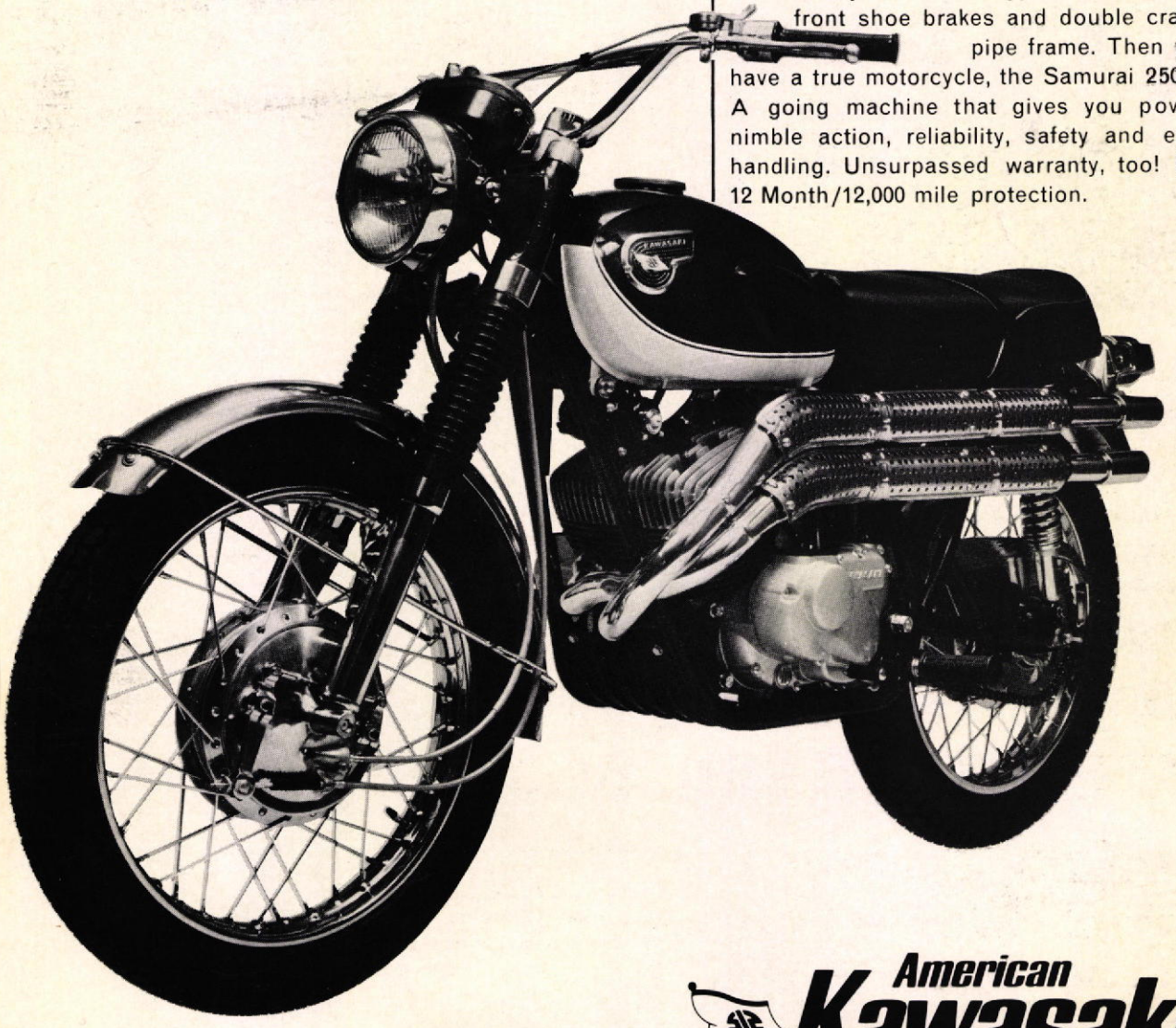
Cycle Guide P.O. Box 267 Mount Morris, Illinois 61054

Kawasaki builds motorcycles for people who know what it's all about!



Like the Kawasaki Samurai 250 street scrambler. A real fire-breathing machine. 31 hp engine digs out and takes you up to 105 mph. Five speed transmission puts you in command of every situation. Take the lead quickly with dual rotary valves, dual carbs, 250cc alloy twin-cylinder action. Does the ¼ mile in 15.1 sec.

Combine all this performance with SUPER-LUBE oil injection, racer type double leading front shoe brakes and double cradle pipe frame. Then you have a true motorcycle, the Samurai 250ss. A going machine that gives you power, nimble action, reliability, safety and easy handling. Unsurpassed warranty, too! Full 12 Month/12,000 mile protection.



American Kawasaki Motorcycle Corp.

Precision engineered and manufactured by Kawasaki Aircraft Co., Ltd., Japan.

12 mo., 12,000 mile warranty · See your dealer or write: American Kawasaki Motorcycle, P.O. Box 2066C, Gardena, California 90247

WHY READ ROAD TEST?

If you are going to buy a new or used car, or operate a car you need to read ROAD TEST.

HERE'S WHY: ROAD TEST HAS NO OBLIGATIONS TO ANY ADVERTISER. Its editorial staff has no restrictions, no sacred cows, no strings or ties.

ROAD TEST *dares to test and report on such controversial products as oil additives, brake linings, tires and their accessories. It has reported on Wynn's Friction Proofing; Metalik Brake Linings; and has experiments on STP and Bardahl in progress. Past issues have disclosed the deficiencies and good qualities of such highly rated cars as the Pontiac GTO; Ford Mustang; Jaguar XKE; Chevrolet Corvair; Lincoln Continental; Cadillac; Imperial; Chevrolet Chevelle 396 and scores of others. More revealing road tests are coming.*

ROAD TEST *MAGAZINE IS WHOLLY UNIQUE. IT ACCEPTS NO AUTOMOBILE ADVERTISING. IT HAS MORE EDITORIAL COVERAGE THAN ANY OTHER CAR MAGAZINE.*

Get the straightforward facts about all popular domestic and imported cars.

ROAD TEST *pulls no punches and presents test results without bias or concealment. It calls a spade a spade and has been praised as the most refreshing breath of fresh air ever to hit the automotive magazine field.*

Please enter my subscription to **ROAD TEST**

	Regularly	SPECIAL OFFER
☐ 1 Year (6 issues)	$3.00	$2.50
☐ 2 Years (12 issues)	$6.00	$4.50
☐ 3 Years (18 issues)	$9.00	$6.00

These prices for USA and Canada; for other foreign countries, add $1.00.

I enclose $_____ cash, check, M.O.

Name _____

Address _____

City _____ *State* _____ *Zip* _____

order from ROAD TEST circulation dept. P.O. Box 22253 Los Angeles, California 90022